THE BIRDS OF THE BRITISH ISLES

MIGRATION AND HABITS

BY
T. A. COWARD

THE WAYSIDE
AND WOODLAND
SERIES

THE BIRDS OF THE BRITISH ISLES

3 *Pl.* 1.

Black Kite. (pp. 157, 276).

Frontispiece.

THE BIRDS OF THE BRITISH ISLES

BY

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"BIRDS OF CHESHIRE," "VERTEBRATE FAUNA OF CHESHIRE,"
"MIGRATION OF BIRDS," "BIRD HAUNTS AND NATURE MEMORIES"

THIRD SERIES

COMPRISING

THEIR MIGRATION AND HABITS

AND

OBSERVATIONS ON OUR RARER VISITANTS

WITH

68 ACCURATELY COLOURED ILLUSTRATIONS

BY ARCHIBALD THORBURN AND OTHERS

REPRODUCED FROM LORD LILFORD'S WORK

"COLOURED FIGURES OF THE BIRDS OF THE BRITISH ISLANDS"

AND 68 PHOTOGRAPHIC ILLUSTRATIONS

SECOND EDITION

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FLYING MACHINES.

By the LITTLE STINT.

(By kind permission of the Proprietors of *Punch*.)

When Bleriot the Channel flew
The people made a great to-do;
They came in thousands just to stare
At the great Conqueror of the Air
Who crossed from France to England's shore,
A flight of twenty miles or more.
"How great an aeroplane!" they said;
"And what a noise the engine made!"
"And how could Bleriot know that he
Would find his way across the sea,
Which none had ever flown before?"
And so they wonder more and more,
Until at last their hats they raise
And cheer to their great hero's praise.
Yet I, when called to make my flight,
Have slipped off in an Arctic night
And lightly flown o'er land and sea,
The only engine carrying me
My heart, no bigger than a shilling,
Which for twelve thousand miles is willing.
Less than two ounces is my weight,
No petrol cans increase my freight;
No chart nor compass 'neath my eyes
To mark the track through trackless skies—
And still untiring to the verge
Of Australasian ocean's surge
From North Siberia's coast I fly,
Spanning the globe unerringly.
No cheering thousands when I land,
No startling posters in the Strand;
No wondering word, no praise is heard,
But then—I only am a bird.

PREFACE.

ORNITHOLOGY is progressive; students of bird-life constantly discover, or imagine that they have discovered, new facts. To keep up with the times books about birds need frequent revision. This, however, is not the only reason why a supplement to "Birds of the British Isles" seems desirable. In the two volumes, complete in themselves, it was impossible to reproduce all the coloured figures from Lord Lilford's work; the rarer species were omitted. A third series gives opportunity for some of these to be figured. Again, since those volumes appeared many important observations have been recorded by ornithologists; for these the pages of *British Birds*, a magazine which keeps us in touch with all that concerns British ornithology, have been searched, and where, in my opinion, they added to or modified my statements I have endeavoured to draw attention to the source of information. Other recent literature has been consulted, and I have added some of my own observations of rarer birds which it has been my luck to watch in the last few years.

This volume also deals in greater detail than was possible before with the problems of migration, so far as these concern our own land and our own birds. For this purpose I have freely consulted "The Practical Handbook of British Birds," a book no serious ornithologist can afford to neglect, and the

results of the wide experience of Dr. Eagle Clarke to be found in his "Studies of Bird Migration." Dr. A. Landsborough Thompson's "Problems of Bird Migration" (1926) is a philosophical and critical exposition of theories and a careful *résumé* of observational and experimental results; it was published after the whole of the present volume was written, but before it had gone to press, so that I was fortunate in being able to consult his work and comment on some of his findings. In 1912, when my manual on "The Migration of Birds" was published, I was less fortunate, for my book appeared slightly in advance of Dr. Clarke's "Studies."

There is yet another reason for an extra volume which will appeal to some, but not to all. Nomenclators continue to revise and rename, striving after the finality which is, apparently, as far off as ever. A new list was published by the B.O.U. Committee in 1923, and by no means all of the members of the Union agree with its findings. Rather than disturb the scientific nomenclature which I adopted in the first two volumes, I prefer to quote the names used in this latest list, showing where they differ from those in the old list and in "A Check-List of British Birds," drawn up, a year later, by Mr. H. F. Witherby. Unfortunately we have no safeguard against further alterations, and although I am no expert on this annoying branch of the science, I have ventured to express my opinion of some of the apparently unjustifiable changes which have been made. If my remarks annoy those who believe that it matters more who first named a species (not who first described it by any means) than that a bird retains a name by which it is generally recognised, I am sorry. The laudable desire to discover the "correct" name which will be universally accepted by following a code of rules has failed in its purpose.

Several of my friends have willingly helped me by allowing me to use their notes of observations on migration:

especially am I indebted to Mr. F. W. Holder, who has made long study of movements on the Lancashire coast; Mr. R. W. Jones, whose point of observation is in North Wales; Mr. Miall Jones, Cardigan Bay; and Major C. L. Williams for notes from Sussex. Miss M. Garnett kindly lent me her excellent colour studies of the soft parts of many birds; she has added greatly to our knowledge of this much-neglected subject.

After most of my photographs had been selected, M. Ad. Burdet kindly placed a number of his excellent pictures at my disposal. My only regret is that I had not more vacancies to fill. My indebtedness to him is not, however, confined to use of his pictures, for he gave me every facility for observing many of our rarer birds in their nesting haunts in Holland. I take this opportunity of expressing my gratitude to those whose names appear below, for the trouble that they took to find photographs of the birds that I wished to figure.

The black-and-white illustrations are from photographs by Mr. Jasper Atkinson, Plates 17, 34, 37, 47, 59, 71, 76, 79, 94, 97, 126; Mr. Howard Bentham, Plates 13, 18, 28, 31, end papers (4); Miss M. G. Best, Plates 6, 43, 56, 65, 104, 107, 109, 114, 116; Mrs. M. D. Brindley, Plates 10, 48, 69, 72, 74, 87, 123; M. Ad. Burdet, Plates 9, 13, 15, 20, 23, 25, 26, 39, 67, 124; Mr. W. E. Glegg, Plates 44, 51, 52, 60, 63, 80, 83, 84, 98, 101, 102; Dr. F. Heatherley, Plates 3, 4, 32, 40, 54, 88, 112, 119; Mr. A. Newstead, Plate 111; Mr. J. D. Rattar, Plates 91, 93, 120.

An alphabetical list of the authors of the various books and papers referred to, with a number to indicate the particular publication consulted, will be of assistance to any student who desires further information, but this list is not intended to be a bibliography.

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THE BIRDS OF THE BRITISH ISLES.

INTRODUCTORY.

SEATED on a deck-chair, watching the churned wake of the steamer, conscious of, though unaware that we are conscious of, the steady regular throb of the powerful engines that are driving us over the seas at fifteen or twenty miles an hour, we idly watch the gulls swinging or drifting over the stern. Without effort, without apparent expenditure of energy, they follow on wings outstretched or flexed, poised but yet keeping pace, veering to right or left, adjusting the position of those feathered limbs so that advantage is seized of every varying puff of wind, or with a few strong but leisured beats covering the space they have lost. A white-garbed figure emerges from the galley; the keen, heavy-browed eyes of the following birds sight him; they quicken their pace, alert, and when the unwanted scraps are heaved overboard, each beautiful scavenger throws up its wings, lowers its webbed feet, and with a half-turn drops to the water. Screaming and scrambling the gulls are left half a mile astern; then they rise, and now, beating the air with steady strokes, follow, and in a very few seconds are again lazily drifting in their old position.

How do they do it? The expert anatomist, the mathematician, the student of physics explains in technical terms,

and we imagine that he understands the mechanics of flight, yet no formula or exposition has enabled man to fly like the bird, however wonderfully he has conquered the air. Even if the problem is solved there is something which exact science cannot supply, something which is beyond mechanical art, the Poetry of Motion. The "Fulmar flying free," careening as it makes that wonderful side swing towards the waves, easy, graceful, absolutely at home in the air, thrills like those wonderful crescendo notes of the Nightingale; there is something beyond definition and explanation in these, as in the flight of the Fulmar.

Above the flowing tide the Knots are flying, a mighty army on the wing. They crowd the air like swarming bees, there is no suggestion of order, no evidence of control. Suddenly, with a single flash, every bird has turned; the flock was a moment ago beating to the left without objective, now it is shooting down to the right. Another flash and it has turned again, and so, now reversing instantaneously, now wheeling with military precision, the whole behaves as one. The mob becomes a column, a long line of birds rising and falling in harmony with the lift of the waves beneath; the column swings seaward, rises, stoops, turns and twists at great speed, and suddenly sweeps landward, and with wings uplifted skyward every bird alights. This is not the flight of Gull or Fulmar, it is the aerial exercise of the Wader, an exhibition of ecstatic joy of power. We wonder how and why they do it, but no study of avian psychology has supplied an answer.

The Swifts circle, screaming, when the summer evening closes in; they rise, swinging round and round, having tired of those races through the air which give an idea of marvellous speed. Soaring heavenward, higher than the Lark, they show up for a moment against some fleecy clouds, gyrating dots, and then vanish in the blue, though their shrill voices may still be heard faintly.

The little yellow Wood-Wren is amongst the fresh young leaves. "It is seldom still," says Hudson, who loved the bird, "for more than a few moments at a time, but is continually passing from branch to branch, from tree to tree." It is delicate, frail, a fairy bird. Surely it has no power in those small wings, through which the light shines as through a gauze when for a second it hovers like a tiny Kestrel; yet it has just come from Tropical Africa.

The Gulls are wanderers, never weary; the Fulmar spends more than half the year without coming to land; the Knot has travelled from the Arctic and may traverse half the globe before it again turns north. The Swift's long narrow wings carry it south before many visiting birds have ceased to care for their young, and the feeble Wood-Wren will follow in due time, though miles of stormy sea lie between its British home and its winter destination.

Each of these varied birds—Gull, Petrel, Wader, Swift, or Warbler, fills us with wonder at the power of flight. This power, which enables the bird to exist, to secure food, to go where no terrestrial animal can follow, is the simple explanation of Migration.

When the Swallow comes in April, what are our feelings? A sense of gratitude that something æsthetically pleasing is here once more? Yes, but do we pause to wonder where that bird has been, and how it knew that so many thousand miles away was its true home? No, we are too used to the Swallow. When the Woodcock suddenly, one October morning, appears in crowds upon our eastern seaboard, what do we think? How it has crossed that grey and stormy autumnal sea? No, but here is another object on which to try our skill, something to kill; and we justify the blood-lust by the apology that it is good to eat, or that when we hear "Mark Cock!" we need skill or the bird will elude us amongst the boles.

If, however, when near that same shore we see a tiny

Goldcrest flitting through the bushes which "shrink landward from the scathing storm," or see it hopping, bright eyed, through the wind-swayed marram, we may think, for we know that the tiny wanderer was yesterday in Scandinavia. In a few hours, how many we do not know, that literal feather-weight has travelled on those tiny rounded wings 400 miles or more. Professor J. A. Thomson (1) gives some ascertained average speeds of flight—30 miles an hour for Crow or Finch, 46 for the more bustling Starling; what is the average speed for the Goldcrest, which we never see doing a flight longer than a few yards at a time? The Professor says that the carefully estimated speed of the American Golden Plover, said to fly 3200 miles in fifteen hours, or 200 miles an hour, "is preposterous"! If we deny the advantage of strong, steady winds, which would help both the strong-winged Plover and the weak Goldcrest, we can see no other solution except that the little bird must have sustained flight for twenty or forty hours! This, even if we accept Gätke's idea of physiological adaptation, seems far more preposterous than a doubled or even trebled flight of a powerful bird when aided by a suitable rapid air-current.

When we look at the Goldcrest and realise what it has done, we can only marvel; we almost wonder if the bird has solved Einstein problems, defying time and space by some force, some energy far beyond our power of comprehension.

We who wondered when Bleriot crossed the narrow strip of sea, and who welcomed, having ceased to wonder, the Japanese who landed after a flight from Tokio, now are calculating in how few days we can reach Australia. But the Little Stint, the Curlew-Sandpiper, the Knot, Grey Plover and Arctic Tern mastered more difficult problems thousands of years ago. "Globe-spanners," Mr. Abel Chapman calls them, and so they are; "Our Greatest Travellers," was for them W. W. Cooke's well-earned title. When we consider the route followed

by some of these Arctic birds, 12,000 miles is no exaggeration, and in the year the bird covers this distance twice!

Mr. Chapman calls attention to another fact, which we can realise for ourselves—that the young birds of the year are the first to reach our shores. On the beach or the settling tank in an inland sewage farm, we see a group of Sanderlings or a few Curlew-Sandpipers even so early as the middle of August; they are, as their plumage shows, undoubtedly young birds which, on Siberian tundras, emerged from the egg, mere balls of down with featherless wing-stumps, but a month or six weeks before. Yet these juveniles have acquired wings strong enough to carry them, and have been endowed with instinctive purpose powerful enough to force them on, so that in these few weeks, in this short life, they have travelled between three and four thousand miles. And they may go on through the Tropics, across the Equator, ever south until they reach the temperate southern zone; and in the spring they will return, halting once more, as they have halted all the way, for food and rest, but ever urged on, they know not how, towards their northern goal.

The distances travelled and the speed at which they are accomplished are not the only marvels of Migration. Philosophic inquiry as to how the habit originated is responsible for many ingenious theories, and closely related is the question, why do they do it? Taverner (2) argued that "however instinctive their habits may now be, there must have been a time when migrations were intelligent movements, intended to escape some danger or secure some advantage." That, of course, must be qualified by what we understand as instinct and intelligence, but it is certain that the bird that leaves an area which a few weeks later will be a frozen, foodless waste, for one where life can be sustained, is gaining advantage. Though just why the Swift elects to leave England at that time of the year when insect life is at its greatest abundance is not

easy to understand. Indeed, the argument of advantage which applies to Arctic or Antarctic species is not equally applicable to those which perform long or short migrations in temperate zones.

The survival of a habit which originated in one or other Glacial Epoch is a very general theory, and we are shown how it applies by the condition of affairs in the Arctic to-day. The bird, having the power of flight, dispenses with the necessity of hibernation or winter sleep, the method by which many mammals and invertebrates preserve life. Some mammals—the whales and perhaps the seals—and most fishes migrate, and it may be that some lower organisms, especially pelagic invertebrates, also perform seasonal movements which transfer them to more suitable areas. The terrestrial mammals, forced on by the approaching ice, retired by land bridges, and became isolated from the home of their ancestors, where they either survived or perished according to their adaptability to a changed environment; but the birds preserved an overpowering love of this ancestral home, and each season strove to reach it, thus developing a habit of travel. Dr. J. A. Allen supplies another argument, sound enough so far as it goes: "Migration is the only manner in which a zoological vacuum in a country whose life-supporting capacity is a regular fluctuating quantity, can be filled by non-hibernating animals." This, no doubt, is true enough; the birds, when the period of famine approaches, being able to depart, do depart, and thus crowd up other areas where food may be abundant enough for the species resident or occupying those areas in the warmer months, but is not plentiful enough for the great increase of hungry visitors. So some of the southern birds are forced to depart in search of less competitive temporary homes. With the return of spring the northern birds depart, seeking the great northern food area, and the overcrowded competitors in the best food-supplying countries seek the evacuated home lands. It is a carefully

considered theory, and is well argued, but it has many objections when we study carefully the life-history of certain species. And it does not explain the origin of migration.

Chasing the sun, the round of seasons explaining the chase, has been put forward as the cause of migration; the sun sustains vegetable life, vegetable life the insect population, the insects the birds. Certainly food, insect or vegetable, is a necessity for birds as for all creatures, but birds do live in certain places without troubling to migrate. Those birds, however, which secure the longest hours of daylight by following the sun will certainly have more time in which to feed and rear their young.

After all, it is so easy to argue as to what is good or bad for birds, and, pleased with our theories, say that this or that explains migration, but are we quite sure that the evolution of the power of flight and adoption of a migratory habit is so great an advantage? Is the drain upon mammalian and invertebrate life, in those forms which seek and secure safety by hibernation, any more severe than that upon birds that migrate? It is, indeed, exactly the same, just sufficiently severe in both cases to prevent over-population, just lax enough to allow the form to survive.

Most extraordinary of all theories is one founded on this drain on animal life, that migration is a special providence to reduce the surplus avian population. Migration has innumerable perils, and many are its victims; but throughout nature we find a merciful law, by which the species survives however many individuals perish. The greater the drain upon the young of any species, the higher becomes the rate of production; the most prolific species are the ones whose progeny are most ruthlessly destroyed.

Whether we shall ever agree about the origin of migration, or discover why birds migrate, is problematical, and really has no great importance; but we may learn some day how they

find their way—whether by sight, memory, or instinct, whatever the last may mean.

A knowledge of the points of the compass, or rather that instinctive ability to maintain one direction, the right one, which we call orientation, undoubtedly exists in birds as in other animals. Primitive or uncivilised man has this gift to a much greater extent than the civilised and boastfully perfect man of to-day, who, by employing chart and compass, mechanical transport, and direction indicators, has degenerated. In an unfamiliar place he is lost, and cannot, in many cases, walk straight. Has he any right to look in pity or contempt upon the "savage" and the bird?

Orientation is qualified when we find that may species do not throughout maintain a southern or northern direction, but incline towards east or west, or traverse a more devious route during part at any rate of the journey. This, we argue, is to avoid obstacles—the trackless, foodless desert, the frozen mountain heights. Yet if they were alone guided by the sun and stars, or by an intuitive knowledge of direction, they would attempt to cross these obstacles. As a matter of fact, some do successfully cross what were formerly believed to be insurmountable obstacles. Von Lucanus (3) affirmed that there is no migration through or over the Alps. M. von Burg (4) shows that the *Commission Ornithologique Suisse* has some 60,000 records of migration from the Alps, and traces the routes, adding that "birds cross over to other valleys, not only at the passes, but often over the crests, summits, and glaciers, probably because of the violent winds that rage in the passes." He adds that "a great many pass over the Alps high over all the crests and peaks," and after telling that most movements take place in the night when the winds are calm, he concludes: "But in this as in other things there are no unalterable rules for their behaviour." This final remark might be the text for all our migration studies.

Faced by the problem of the deviating routes, we may justly argue that ages ago a proportion of the migrants attempted the impossible and failed, leaving no progeny ; the less adventurous and more fortunate took safer pathways and became parents of the race ; their offspring inherited an impulse to travel in the ways of their forebears. Likely enough large numbers of young inexperienced birds still wander along the dangerous tracks and perish.

Memory in all higher animals seems to be well developed, though it may be a memory quite apart from reasoning power. Landmarks may be remembered and serve as guides. But how can memory serve the young Sanderling or Curlew-Sandpiper, which, when its parents, owing to the moult, are still unfit for travel, starts on an unguided, unknown track ? These young birds can know no landmarks, have no notion of how to find the spots where they can rest and obtain food ; yet they do it, after a journey of some 3000 miles, as we know when we see them unaccompanied by a single experienced traveller contentedly feeding on our mud-flats.

One friend, an airman of experience, suggested to me that high flight, if it was a fact, would enable the bird to take full advantage of all sun and moonlight, giving it wider vision. This is a reasonable argument, and at first sight it would seem to be supported by the evidence that when birds are attracted to the lighthouses visibility is poor. Accidents occur most frequently, not on dark nights when the sky is clear or even cloudy, but when drizzle or mist obscures the view. But there again we do not know what are the conditions in the upper air, for many of these nights of poor visibility are due to surface fog. Once more we are left wondering.

The old idea that one or two old and experienced birds act as leaders or guides is unsupported by evidence, though we cannot deny that in some cases it may occur.

Path-finding does not end with the discovery of suitable

winter quarters and return to the country of birth. In very many instances, as proved by marking birds with light rings, both old and young birds return to the actual nesting site. Memory doubtless functions to some extent. During its early life the bird, even though it leaves and does not return to the nest when fledged, will become acquainted with its environment; it remains near its home during adolescence, and learns its way about.

The old bird recognises certain twigs, trees, rocks or other features as indications of the nesting site, for if some of these are removed or altered it is at fault. A Robin had nested in an old collapsible boat which was in my way, and without disturbing the nest I moved the boat; the Robin returned and went to the spot, but was puzzled; but when it recognised the boat it immediately found the nest and, in the new position, hatched and brought off the young.

Even this remarkable memory, which enables a bird to locate a nesting site when to our eyes the surroundings have monotonous similarity, has limitations. The intelligence of species and individuals varies. Mr. H. Guthrie-Smith (5) tells how he puzzled the White-fronted Terns on a New Zealand beach. His experiments on one bird, repeated with similar results with others, proved that it was the actual location of the scoop or "egg-pit," amongst crowds of others apparently exactly the same, which the bird recognised, and when an egg was laid, nest and egg were associated in the bird's mind. He removed the egg three inches from the nest, and the puzzled owner was helpless; she ran round or circled in the air, but made no effort to make a new scoop or replace the egg, but when the egg was returned she brooded happily. Instinct, coupled with a remarkable memory, was unreasoning when an unexpected situation had arisen.

Certainly memory of route cannot function in every case, for there are many species which travel by one route in autumn

and another in spring. Many American ornithologists have demonstrated this ; these birds cannot remember ground over which they have never before travelled.

No, on the subject of path-finding and homing we are left wondering, trying to solve a problem that is still wrapt in mystery. The task of solving these problems seems too great for our feeble brains, and yet it is this very difficulty that makes Migration so intensely interesting. It is a mystery or complex of mysteries ; we are driven back to the conclusion that Migration is regulated or controlled by forces which we cannot understand or define. We talk about the Laws of Nature, of God, or the Cosmos : it is all one and the same, however we express it. But such confession is feeble if we make it the excuse for ceasing to investigate, ceasing to attempt to solve the mysteries.

> " There are more things in heaven and earth, Horatio,
> Than are dreamt of in your philosophy."

But our philosophy must not be a stagnant weed-grown pond, but a living stream of thought. If we are baffled we are not conquered, for we can watch and ponder, work and record, and each seemingly trivial but faithful observation may be a stepping-stone to higher truths.

To spend our time in studying the pathway of a bird, striving to understand its life-story and penetrate its purpose, may seem trivial. It is far otherwise. Twice a year there sweeps across the globe, from north to south and south to north, an army, incalculable in numbers, of the busiest workers ; whether they be friend or foe of man, in fact or in his imagination, they are an immense economic force. They regulate the increase or decrease of the insect hordes, and, directly or through these insects, of the vegetable world ; as they pass they police and save or destroy our crops. They devour weeds or convey the seeds to other areas ; for good or bad they influence our lives ;

they are an absolutely necessary part of Nature's scheme. Is it, then, waste of time to learn their ways? It is our duty, for knowledge of these ways may be man's salvation.

But there is something more; something more important than the economic outlook, the temporal relationship to Man. Bird and Man, important though we deem the second, are but actors in the drama of the Universe. Their parts are important, but not all-important. Ornithology studied to the exclusion of other sciences is futile, but studied with an open mind as an adjunct to other sciences—including genuine theology as well as sociology—becomes important. Specialisation aims at the elucidation of problems and demonstration of facts. Each fact—if fact it is—may throw a glimmer of light on the obscurity of the Eternal Scheme.

MIGRATION.

MIGRATION, or the movements of birds from place to place, has great fascination for students of bird life. It appeals to the popular fancy—has, indeed, appealed so long as any one has taken notice of birds and the uninitiated wish to know all about it, and expect the ornithologist to elucidate all its mysteries. The seasonal movements of birds are mysterious, and in spite of the fact that we know that the majority of birds perform a long or short journey twice a year, and can trace that journey in certain cases with a fair amount of accuracy, we are still in the dark as to how and why it is performed.

Much has been written on the subject; explanations of the origin of the habit have been offered; theories propounded why birds thus save life during the winter, how they know when and where to travel, how they find their way, and at what speed and height they perform the journey. All are theories, and only theories, however well they fit in with known facts; the answer to most questions is that we do not know.

It is not my intention to repeat or add to the theories, to support or attempt to refute any, but to consider rather the known facts of migration, so far as personal experience leads me to believe them to be facts, which influence the avifauna of the British Isles. We know that at certain seasons we see certain birds, and at other times we do not see them; we wish to know whence they come, whither they go, and how far we can follow their movements. Those who wish to study the pros and cons

of various theories of the origin of Migration cannot do better than consult Dr. A. Landsborough Thomson's "Problems of Bird-Migration" (122). One suggestion which finds favour in his sight is that migration may not have been "a thing of slow growth, built up only gradually in the course of ages," but may have had sudden appearance, just as we find successful "mutations" in structural evolution.

A glance at the long list of birds—nearly 500 now—which are, rightly or wrongly, given a place on the British list, shows that compared with many other areas our avifauna has respectable dimensions. Why is this? How is it that a small group of islands on the western outskirts of a great continental region is so well supplied with birds? Before answering this question we must examine the list critically, when we shall see that it comprises several distinct groups, not divided or classified systematically, but according to habits. The first rough division is between the Residents and Visitors, for all birds which nest in our islands are residents. This simple division supplies no clue to the origin of any species, nor explains the reason of the visits, and it is greatly complicated by the fact that very many species are represented by individuals which nest and others which merely pay visits—non-breeding visitors. We must therefore analyse more minutely, and adopt the old groups or group-names—Permanent Residents; Summer Residents or Visitors; Winter Visitors; and Passage Migrants, or Spring and Autumn Visitors.

Unfortunately, not all these groups will embrace every visitor, and various ornithologists have added a fifth group or class, to include birds described as Vagrants, Occasional, Rare, or Accidental Visitors. These irregular visitors are the most troublesome to understand, but they are numerous in species though not in individuals.

If these various groups or classes are defined we discover that there are many species which cannot be described as belonging

to one group only, and that the fifth group, if not some of the others, needs further subdivision. Indeed, a sixth division, which we may call Irruptional or Invading Migrants, would include certain birds which from time to time reach us in force, but are not regular visitors. The groups will then stand as follows :—

1. Permanent Residents. Birds which nest in the British Isles and remain with us all the year.
2. Summer Residents. Birds which nest in Britain in the summer and leave for winter quarters to the south in autumn.
3. Winter Visitors. Birds which nest beyond our islands and come to us for the winter months.
4. Passage Migrants. Birds which nest further north or beyond our islands and visit us on their way to winter quarters further south.
5. Irregular Visitors. Birds which appear occasionally, either as accidental wanderers to our shores, or as exceptional long-distance travellers.
6. Spasmodic Immigrants. Birds which from time to time invade our islands in large numbers, apparently travelling west or south from overcrowded breeding areas.

Each of these definitions requires qualification or explanation, and certain species must be classed in several groups. Take such familiar species as the Song-Thrush, Starling, or Skylark. In all three species some seem to remain all their lives in the immediate neighbourhood of the site of the nest in which they were hatched, and will nest when mature in this same locality. But others are restless, and, as if bent on seeing more of life, leave our shores in autumn for winter quarters further south. A third contingent comes from further north in autumn, and either remains here all winter, to return north in spring, or passes on towards the south after a stay of a few hours, days, or weeks. There may be a few individuals of the same species

or closely allied sub-species, which, having nested in Central Europe or further east, reach us as accidental or abnormal wanderers. To the ordinary observer representatives of various geographical areas, whether called sub-species or not, show no distinctive characters ; the origin of any individual is as a rule a matter of uncertainty. The systematic worker may show or attempt to show, by some difference in shade, in structure, or size, whence these stragglers came, but it is only when sub-specific characters are distinct that we can be certain, and even then the fact of variability must not be overlooked.

The problem of accident, and the validity of sub-specific rank are controversial questions which may be settled in the distant future, when we get agreement between theoretical, as well as practical, ornithologists.

Permanent Residents

Recognising the fact that some of the birds which are usually termed Permanent Residents may include examples of groups 2, 3, 4, and possibly 5, we realise that class 1 applies only to individuals, and not species. We may well wonder why one individual, say a Song-Thrush, shall elect to remain at home, and another, even from the same nest, have the wander lust. Very glibly we repeat that Nature abhors a vacuum, but forget that Nature also objects to overcrowding. If all individuals which were hatched in any area survived or remained in that area, the food supply, or the territorial requirements which are regulated by food supply, would be threatened ; the decimation would be greater than it is. A certain number can safely remain to maintain the average population, as age or accident reduces the real permanent residents, but others must seek new homes where existence is possible. How far they succeed we cannot say. Variation in plumage or form we admit, variation in habit we are bound to acknowledge if we study the living bird, but psychological variation is another matter,

especially if we refuse to credit the bird with a mind. Natural laws are mysterious, but is there anything supernatural in the fact that one bird is a stay-at-home and another a wanderer? The behaviour of the individual, whether it stops or goes, may be purely instinctive—whatever we mean by this word—and the one which leaves its home may be obeying an unconscious but perfectly natural urge to distribute its kind.

Many of the larger raptorial birds, which from the nature of their habits require an extensive individual territory in which to procure food, are very sedentary, but their young are habitual wanderers. They are, it appears, driven from the nest area by their parents so soon as they become undesirable competitors. Some of these young birds become passage migrants, following the food supply by accompanying migrating flocks, but others remain within reasonable distance of their original home, ready to take possession of the old territory should a vacancy occur.

Certain birds have some claim to be looked upon as purely Permanent Residents. For example, we have the British races, insular forms, of the Titmice, which, so far as we know, do not migrate or, at any rate, go abroad. Systematists do not give them specific rank, and it is therefore only the sub-species or island race which is a permanent resident. According to some ornithologists the same applies to the Red Grouse, but it is so far distinct from its nearest congener, the Continental Willow-Grouse, that it has been long elevated to specific rank.

The whole question of species and sub-species is most difficult; where and when can we say that a geographical race becomes so distinct as to be a species? Is it when it refuses to inter-breed with another nearly related form, or when the two fail to produce fertile hybrids? This artificial distinction has never been settled. Are the Carrion and Hooded Crows one or two species? Their hybrids are fertile.

Even if we decide that our races of Titmice, or indeed British races of other species, are all-year residents, and that the Red

Grouse is distinct, we must form some conclusion about the meaning of migration. Our views are too insular ; we unconsciously deem a bird a migrant only if it leaves our land—that is, if it crosses the sea. This is obviously absurd, for a bird that nests say in the Taimyr Peninsula and winters in India performs a very much longer migration that is undertaken by many of our acknowledged migrants, and need not cross any sea. If a bird nests in Sutherland and winters in Cornwall, few will deny that it migrates ; but what about a Pied Wagtail, for instance, which nests in Somerset and winters in Devon or Dorset ? It certainly migrates from breeding haunts to winter quarters, though the journey is short. And if we admit this, which is reasonable, what are we to say of the Robin which nests in a neighbouring wood, but comes in winter to spend its time in the garden ? And what is the House-Sparrow, which leaves us in autumn to loot the cornfields, roosting gregariously and noisily at night miles from its spring and winter home ? Migration should be a very elastic term.

A bird's breeding quarters are of necessity restricted or localised by the place in which it nests and the area which it daily works for food for its young and itself, an area now, thanks to Mr. H. E. Howard (123), known as its territory, and where, in many cases, it strives to eliminate competition. Its winter quarters have no fixed bounds. A bird may remain all winter in one spot provided that food is there plentiful, or it may wander from place to place, following a varied food supply or seeking a suitable food base.

Wandering is the normal habit of the Titmice ; the pair acquire and assert the right of territory, becoming sedentary around the spot where they nest and rear their young ; but when the young can look after themselves, old and young join forces with other families, become sociable, and wander from place to place in nomadic bands. They may not travel many miles from the nesting site ; they may wander half across

England—who can tell? What they most certainly accomplish is a short inland migratory journey.

During a mild winter it is probable that the Red Grouse never leaves the vicinity of that part of the moor on which it nested, but in most places and in most years there is some movement from the "tops" towards the lower, more sheltered valleys. This too is a migration, even if we call it a weather movement. Exceptional weather may cause oversea migration of species which do not usually leave Britain. Large westward movements in or before storms are not infrequent, and many birds cross the Irish Sea to seek milder conditions in Ireland.

Thus the Permanent Resident as a species does not exist, although individuals may be sedentary, remaining all their life in a restricted area. The Robin may be hatched in a garden, and when mature secure territory in that garden, and though it may ramble to adjacent gardens and fight with the owners of other territories on its round, it may return periodically to its own location; but all Robins are not so attached to their home.

Summer Residents

The second class, the Summer Residents, includes the birds which have given origin to the general idea of Migrants. The return of birds in spring, after a winter's absence, is far more noticeable than the arrival in autumn of those birds from farther north, which we class as Winter Visitors. Popular interest and poetic fancy, as well as the æsthetic sense, is the summer migrant's advertisement; the Swallow, the Cuckoo, the Nightingale—"harbingers of spring"—and recently the Chiffchaff and Wheatear, have secured "a good Press." The explanation is not difficult.

In spring we see the Swallow hawking for flies, a gleaming blue streak, elegant in form, adroit on the wing; we hear the Cuckoo's call, one of the simplest avian sounds to imitate; we

hear the wonderful song of the Nightingale when other spring musicians have settled down for the night—or hear some other nocturnal songster and imagine that we have heard the Nightingale! These sights and sounds have not been noticed for months, and suddenly, without warning, unless from premature notices in the local papers, the birds are here. We welcome them as we welcome the first primrose or bluebell.

The interest in the vernal appearance of birds is not modern; indeed, it is very ancient. The Greek philosophers and the wise Solomon watched for and wondered at the birds. No need to emphasise here that whatever was the knowledge or idea about migration amongst the ancients, there followed in mediæval days a long period of ignorance, when such notions as hibernation, spontaneous generation and miraculous creation were the vogue. Still, migration was noticed; the arrival of spring visitors was expected and watched for.

Our Summer Residents include some individuals which, if we limit migration by oversea travel, are also Permanent Residents, for a number of species—the Blackcap, Chiffchaff, Stone-Curlew, Corncrake, Ring-Ouzel, and more rarely the Swallow—may remain to winter in the south or south-west of England or the south-east of Ireland.

Many species which nest in Britain also nest much farther north or east, and pass through, usually without suggestion of hurry, on their way to or from these haunts. These are, of course, Passage Migrants, in class 4 as well as class 2. In some there is sufficient difference to distinguish the racial characters, even in the field. The Wheatear and Pied Wagtail are good examples. In the former the British nesting form is smaller and duller in colour than the long-distance traveller, the Greenland Wheatear, and the dark-backed Pied Wagtail is a British and southern race of the more widely distributed White Wagtail. Both these northern birds pass through our islands, but whether the two forms of the Wheatear ever inter-

breed is uncertain, though I have seen the smaller British Wheatear, which had already staked out its claim, boldly attack one of the larger and heavier Greenland birds that passed through its area, and had possibly displayed to the female, who remained passive during the fray. The White Wagtail has frequently mated with the Pied, and in Shetland I found it the only nesting species, although I was told that the Pied had bred in the south of the islands.

The majority of these Summer Residents winter in Africa or South Europe, and many travel far east before they turn south to reach Central or Southern Africa; they must use the Nile Valley, though many are known to cross the Sahara. Thus a stream of migration, which may include many British nesters, passes along either side of the Mediterranean, some birds following the Italian coast and others taking advantage of the Mediterranean islands to reach the African shores.

Winter Visitors

The third class, Winter Visitors, includes birds which may or may not remain with us all winter. It is easy to say that the Fieldfare, Redwing, or Woodcock comes to winter with us every year, but more than remain pass on towards the south, merely treating our islands as a hostelry *en route*. Again, there are a number of species, like the Siskin, Mealy Redpoll, and Waxwing, which may appear in very large numbers, or may hardly be noticed in another winter. The Siskin and the Woodcock must also be included in class 1 or 2, for many nest here, the latter regularly. When the numbers are very much greater than usual, and this applies particularly to the Waxwing, it is reasonable to include them in class 6, for the immigration is more or less of an irruption. The Brambling is always present as a passage bird on our eastern seaboard in autumn, but the numbers which spread inland and remain to

winter are regulated by food supply ; a good crop of beech-nuts will keep the Bramblings for months under or in one clump of trees.

What causes a Waxwing invasion is uncertain, but in many years few are seen. Probably the invasions are due to over-crowding in North Europe, or to weather conditions which drives the bird west of its normal winter quarters. As the birds return north in spring it is not as suggestive of an attempt to colonise as is an irruption of Sand-Grouse.

The majority, if not all, Winter Visitors may be partially or entirely passage birds in any particular year ; none may remain to winter with us.

Passage Migrants

The Passage Migrants—class 4—may be subdivided geographically, according to their place of origin, their breeding area. This I shall refer to later. The numbers which pass through Britain or along our coasts vary from year to year, and it is reasonable to explain this by the prevalence of certain winds ; the birds may hug a coast-line in order to save themselves from being drifted seaward, or they may, unconsciously, be carried across the North Sea. Some species prefer coast-wise travels ; others seem to select a cross-country journey ; if there is choice in the matter it is probably regulated by the exigency of food. Some are more abundant in spring than in autumn, others are seldom seen on vernal migration ; some travel north and south by entirely different routes. This variation of route is more noticeable in America than in the British Islands.

Passage birds were formerly known as Spring and Autumn Migrants, but as numbers of many species, previously included in this category, may remain all winter, and others all summer, the older title is hardly applicable.

This habit of wintering or summering—that is, extending the

stay on our shores instead of passing farther south or north, to normal winter or breeding quarters—has apparently become more frequent in the last few years than was formerly the case. It is especially noticeable amongst some of the Waders and Ducks. Turnstones have long been known to remain on our shores all summer, but this may be due to the fact that their breeding area is not far removed from our islands; but it is less easy to understand why considerable numbers of Bar-tailed Godwits, Knots, Sanderlings, and Grey Plovers will, from time to time, remain throughout June, July, and August on one short length of beach. The almost daily observations of my friend, Mr. F. W. Holder, prove that the habit is, of late years at any rate, regular. Nor is it easy to say that the birds are immature, unable to nest, and therefore are not urged to proceed further north.

Mrs. Meinertzhagen (Miss A. C. Jackson), in her exhaustive study of the moults of Waders (6), found many cases of abnormal moult. She says, "These birds may be barren or they may lack the necessary constitutional vigour to enable them to participate in the spring moult, though the fact must not be overlooked that the assumption of the nuptial plumage does not in all cases indicate the breeding potentiality of an adult bird." Further, she states that "the flocks of Oyster-catchers, Turnstones, Bar-tailed Godwits, and Curlews, which may be seen all summer through on certain parts of our coasts, are doubtless made up largely of these young non-breeding birds."

The summering of certain Ducks has, at any rate so far as my own observations go, preceded the growth of the habit of nesting. Neither Tufted Ducks nor Shovelers nested regularly in Cheshire some thirty years ago, and both species began to remain later in summer and appear earlier in autumn, before they remained throughout the summer months; soon after this happened the two species began to nest annually. The

Common Scoter is another species which may now be seen off-shore in the summer months, and, curiously, visits inland waters in small numbers in July; it may be that the bird is increasing in numbers and that sooner or later it will extend its range southward.

Again and again one is struck by the fact that there are, throughout the nesting season, large numbers of birds which do not find or attempt to find mates. We call these non-breeders, but evidently they are not sterile or all immature, for when a mate is required one is immediately forthcoming. Starlings and Lapwings, to take examples from very different families, are sociable species, and may be seen in flocks when others of their kind are engaged in domestic duties. So far as we can see these are potentially mature birds. If one Starling of a nesting pair is destroyed or perishes the survivor immediately secures a mate, and the gap to be filled up may be of either sex. Nature, we argue, will not allow the effort to rear the young to fail, but this does not explain why Nature prevents these unmated birds from rearing young amongst themselves. A more reasonable explanation is the one already referred to, the need of each pair to acquire sufficient territory in which to supply the necessities of the brood. There is, apparently, a house shortage in the avian world, and these unmated birds are on a kind of waiting list, ready to secure a site when a vacancy occurs. As there are only a limited number of suitable sites, bachelor males and spinster females are glad to find a home when death creates a vacancy.

This habit has long been known amongst raptorial and predacious birds, for gamekeepers, shepherds, and others have striven to stay the depredations of their enemies by slaying the birds at the nest. But before the eggs are destroyed or the young starved the bereaved survivor finds a mate; male or female may be shot one after the other, but so long as the nest is not destroyed the supply of willing helpers seems

inexhaustible. Mr. H. S. Gladstone recorded (7) that his gamekeepers shot four adult Carrion-Crows within three days and a fifth a week later at a nest which contained two young birds.

This is all the more remarkable when we consider that the territory of a rapacious bird is extensive, and that one pair will not allow unmated birds to trespass on their area ; any one who has watched Peregrines will realise how quickly both tiercel and falcon sight and attack any wandering Peregrine which approaches their domain. In my own neighbourhood, when the Little Owl was spreading north and had just established itself, one pair and one pair only was known. At least two birds were slain, but by some means help was secured and a pair remained and brought off young. How these birds are made aware of the fact that they are wanted has never been explained. Elsewhere (8) I suggested a very theoretical explanation, no doubt considered wild and foolish by those who refuse to accept anything which they cannot explain. Some emanations, rays, vibrations may exist, about which so far we know nothing, which, under certain circumstances can be appreciated by birds at a distance. Since we learnt so much about wireless transmission the ideas of telepathic communication have become less fantastic. If a bird can consciously or unconsciously broadcast its needs—which after all are natural needs—it is conceivable that others can receive and answer the S.O.S. The sexual emotions are the most powerful of all animal activities ; they may be the generating force, the transmission of which is of service to the race rather than the individual.

The argument that there are enough but only enough suitable nesting sites for just that number of pairs which is required to produce enough young to fill the gaps due to the drain during the juvenile and adolescent period, is easy enough to grasp when we are considering a small area like the British Isles. But it may apply equally well to the trackless tundras of Siberia and Greenland. When we see, on our shores in autumn, the vast

flocks of Knots, Godwits, Dunlins, Sanderlings, Curlew, and other birds which are entirely or in part Passage Migrants, it is evident that there are huge areas in which these birds nest which are, so far, undiscovered. Each of these birds needs a territory or food base, and the food supply may, indeed must have limits. Those who have visited North Siberia, Greenland, Spitzbergen, Novaia Zemlia, or the New Siberian Islands, though they are impressed with the abundance of bird-life, do not emphasise overcrowding; nevertheless, there may be factors which render certain areas unsuitable for more than now occupy them. It would be pure fancy, unsupported by evidence, to suggest that the gregarious species are ruled by a spirit of the flock, similar to the "Spirit of the Hive" in bees and other social insects, which ordains how many shall go north to continue procreative duties, and how many stand aside, and remain where food is plentiful, and so cause no excessive drain on a limited supply for those engaged in the important work.

When birds like the Starling and Lapwing remain in flocks whilst others are nesting this food question does not apply; the non-breeders are working the area required by the breeders, at any rate to some extent.

Certain birds, classed as winter visitors or passage migrants, occasionally attempt to nest, but cannot be classed as Summer Residents. The Black Redstart is a northern or eastern nester, and the Hoopoe, Golden Oriole, Bittern, and Ruff show by their repeated attempts that were they allowed they would establish themselves and be justly included in Class 2.

A very large number of birds are, however, purely passage migrants, and cannot be included in any other class; they reach us from places far remote, and we are within neither their normal breeding area nor wintering quarters. Many of these come so far out of their known track or route that we must place them in a distinct class, and it is the one which presents most difficult problems.

Irregular Visitors

As already explained this Class 5 has had many names, and it has been swelled from time to time by the inclusion of birds which have no just claim to be called British. In the list at the end of this book I have given such explanation as seems reasonable, and in certain cases have discussed the validity of the records. Birds of this vagrant, accidental, or abnormal class may be separated or classified according to their usual geographical habitats—the area of origin. Such division shows at once that a large proportion of these stragglers, especially those which reach out-of-the way or isolated islands, or are recognised at these spots—such as the Isle of May, Fair Island, St. Kilda, or the Flannans, come from the northern and eastern Palæarctic Region, and have reached the British Isles by a westerly migration route. A smaller number nest on the Continent much nearer to Britain, but their route towards winter quarters should not, under ordinary circumstances, induce them to cross the North Sea. It is probable that the west and south-west journey is undertaken only under certain meteorological conditions, which, however, appear to be more frequent than is generally supposed.

Birds of a third group, generally but not always discovered on our southern shores, have a normal range in the Mediterranean basin, or even still further east ; their occurrence is more difficult to explain, for they have taken an autumnal journey in practically an incorrect or abnormal direction. That the usual direction of birds of the Northern Hemisphere is north in spring and south in autumn is well known ; indeed it is frequently asserted that this is the migration course without exception. Many of these wanderers from south-eastern Europe or western Asia must incline north as well as west to reach us. It must be remembered that when we examine the credentials of such birds we must not confine our instances to occurrence in

Britain, but discover how far they have wandered elsewhere in Europe.

The fourth division includes a number of undoubted American species whose usual migration journeys are restricted to a distinctly southward track. To many naturalists the possibility of an unaided trans-Atlantic journey seems impossible. I believe that not only is it possible for very many species, but that it is repeatedly undertaken, though probably not willingly. The fact that certain species have occurred on many occasions has led most people to modify their views, but the whole matter is complicated by the fact that many American birds have been brought over from time to time, either to be kept in captivity—when there is always the possibility of escape—or to be released with the idea of improving our avifauna.

There are a few regular visitors from the South, mostly pelagic species, whose breeding grounds are south of the Equator, and whose normal winter quarters (during our summer months) are north of their summer homes. Just as many Palæarctic and Nearctic birds reach winter quarters in the Southern Hemisphere, so some southern breeders cross the Equator, and are met with in our seas. Others, however, mostly the larger Petrels, have come accidentally, and their wanderings appear to be the result of failure to orient ; they are, indeed, lost.

Added to these are a number of species whose qualifications for inclusion are rejected by all thoughtful ornithologists. Their presence in our land is due to intentional and artificial introduction, to escape from captivity, or accidental conveyance on ship-board.

Spasmodic Immigrants

The sixth division, already referred to, would include a small number of species whose appearance from time to time is in the nature of an invasion or irruption. This class embraces many interesting birds and has great importance when we consider the matter of geographical distribution, for undoubtedly

some—the Sand-Grouse for example—appear not to be performing a seasonal migration, but to be endeavouring to establish themselves in a new country, to be, in fact, attempting to extend the borders of their breeding range. What species might or might not be included in this category is a matter for personal opinion. Every now and then we experience what we call a Waxwing year; these birds are met with in small winter flocks in all parts, but they make no attempt to remain in spring, and return whence they came. They cannot be classed as regular winter visitors, nor strictly as accidental wanderers; they come intentionally and depart in due time. With immigration of Crossbills, however, there is only partial return north in spring, and after any large immigration numbers of pairs nest or attempt to nest in suitable places. Small colonies are formed, and for some years after the first influx the birds become permanent residents. One or two colonies still exist which were established during the last important invasion, sixteen years ago, though they have been shamefully exploited by ruthless collectors.

Whenever there has been an irruption of Sand-Grouse of any importance some pairs have nested or attempted to nest, but the unsuitability of the environment, or the greed of collectors, have speedily put an end to colonisation. The Quail, on the other hand, is a normal summer visitor in small numbers, which from time to time appears in great force, but the over-abundance quickly declines. This irruption is due, no doubt, to over-crowding in other breeding haunts. The periodical increase of certain common species may have a similar explanation. For some years we have heard a good deal about the decline in the numbers of visiting Swallows and House-Martins, and though in this case there is another probable explanation —competition with other more go-ahead birds—it may be that the decline is the result of unusual increase in the past, a reaction to arrive at the normal population. The fact that every breeding

pair strives to produce the full complement of young implies that given suitable conditions during and after the breeding season there will be an increase in the numbers of mature birds. Conditions, however, which insure the survival of an unusually large number of immature birds rarely occur, and it is only when certain combinations of weather conditions provide an abundant food supply, that this increase happens. If in a succession of years the favourable conditions are maintained, and there is no normal drain on the increasing species, the area affected will become overcrowded. Is it then unreasonable to believe that a proportion of the young, finding no chance of maintaining life in a highly competitive area, will endeavour to colonize elsewhere ?

I am fully aware that the experience gained by careful examination of the recovery of marked or " ringed " birds, gives very little evidence of the spread of species, or of the attempt of young birds to nest in other districts from those in which they were born. Indeed the conclusion that all birds will, if possible, return home after visiting winter quarters, seems incontrovertible. Yet Dr. A. L. Thomson (9), who has tabulated and critically examined the results obtained by several ringing schemes, finds that among Ducks, and especially with the Mallard or Wild Duck, which owing to the fact that it is a favourite sporting and food bird, provides a larger number of recoveries than most species, there is some tendency for young birds to leave their home and nest when mature in a fresh district. This " abmigration," as he calls it, he believes is caused by the sociable habits of the bird ; the young birds during the winter associate with migratory Mallards whose home is beyond our Islands, and return with them in spring. They may, of course, form premature amatory connections, for amongst Mallards, both he and Mr. H. G. Alexander point out (10), there is no noticeable racial distinction between our birds and those of Western Europe.

Although there is very little evidence, if any, that " abmigration " occurs in other groups, especially Passerine birds, the proportion of recoveries is so small that it would be premature to say that it never happens. It is evident to any observer that during spring and autumn migration, birds of closely related geographical races—our summer residents and passage migrants from abroad—do associate and travel together, and as the racial characters are in many cases very slight, the presence of a single alien amongst numbers of an established form might not only be overlooked but in a generation or two all the alien distinctions might be lost in the new environment. When we see how frequently related Wagtails join forces—the Yellow and the Blue-headed, the Pied and the White—and how the individuals exhibit friendly relations with individuals of another race, we can understand that occasionally a bird may be led far from its intended destination.

Furthermore, the sociable habit is by no means restricted to the association of related species, for large numbers of birds, sharing partiality for certain spots and certain foods, travel together in mixed flocks, and exhibit undoubted signs of fellowship. Probably something akin to this supposed origin or abmigration, though not followed by nesting in a new area, explains the abnormal wandering and occurrence of birds far from their ordinary destinations or migration routes. That some of these wanderings may end in an attempt to settle is possible but so far has not been proved. That ranges are constantly extended is, however, a fact ; we have only to study the history of the Great Crested Grebe, the Turtle-Dove, and the Little Owl, to see that the young bird by no means always returns to nest in its home district. But this extension of the breeding area comes more directly under the heading of Geographical Distribution than Migration, and yet the spread is in most species dependent upon migration. Without migration we should have no extension of range.

Geographical Position

The Geographical Position of the British Islands explains to some extent the size and variety of our avifauna. The term Palæarctic Region is used for convenience to describe an area inhabited by certain animals and plants which require a temperate rather than tropical climate. All our birds, with the exception of the few which nest in the southern hemisphere, belong to this region, and the southern nesters which wander here occasionally are well adapted to visit temperate regions, and indeed have origin in southern temperate areas.

A glance at the map of the World shows our islands as a westerly group off the European Continent, or, more correctly, the great European-Asiatic Continent, the most extensive land area on the map. But this is not all, for the group is situated on the south-western boundary of a great coastal bend, which extends from that home of unknown hosts of birds, the Taimyr Peninsula, an area of tundra untrodden by man except for a few nomadic Mongols, but eminently suited for the needs of countless Waders and other orders of birds. This coastal bend includes the island group of Novaia Zemlia (Nova Zembla), and passing round Lapland and the Scandinavian Peninsula, ends in Europe with the Iberian Peninsula, and futher south with the great westward bulge of West Africa. The British Isles lie in a more or less direct line between Norway and Spain.

Two schools of ornithologists have for many years disputed about the method or route by which birds travel when migrating. The point at issue is whether they follow defined routes, aerial high roads, or pass south or north by what has been termed a "broad front." The route theorists, a numerous body, assert that birds have defined fly-lines from breeding quarters to winter quarters, and many of them have mapped out these routes. Otto Herman (124), collected all the supposed routes and by cartography shows their absurdity, pointing out that if birds

travel by all the tracks "which authors invented for them" they would cross and recross pathways in an amazing manner.

The other school, supported by Gätke (125), one of the ablest and most assiduous students of migration in his "observatory" at Heligoland, yet one of the wildest and most dogmatic theorists, is that the pathway of the migrating host is limited only by the east and west bounds of the breeding area and winter quarters. That is to say that birds travel on a broad front, in autumn south and west—for Gätke was emphatic about due east-to-west travel—over every obstacle in their way, for he maintains they normally journey at so great an elevation that there can be no obstacles. Gätke believed that at any spot on the route, where there was as skilful an observer as himself, as immense a volume of migratory passage might be observed as he himself noted at Heligoland.

As usual there is some truth in each of the opposed theories. The broad front is in a measure correct in so much as birds travel by any route which is well supplied with fertile country where food can be obtained, but their course may be east or west of this track according to the direction and force of the wind. River valleys are utilised, and may be described as fly-lines, mountain passes are preferred to higher crossings, but the most consistently followed lines of migration are coastal.

Coast lines are often closely followed, the birds even altering their direction to pass round headlands or other obstacles in order to follow coastal irregularities. Yet in places shortening of the route is usual; an isthmus will be crossed and overland journeys are taken from sea to sea. In our own islands, although the majority of passage birds follow the coast, large numbers, even of normally coasting species, travel overland; this explains the frequency on inland waters and sewage farms of many aquatic or coast-loving species. They rest where food is to be found when travelling from sea to sea

Examining the position of the British Isles more minutely,

we see that they lie to the south-west of Scandinavia, more or less opposite the peninsula of Denmark, which forms a barrier or half-door to the Baltic. The bulk of the Siberian and Russian southward-bound migrants travelling west along the northern shores of the Eurasian Continent, or south along the great northward flowing rivers, evidently trend towards the west, and rather than pass north round the Lapland and North Norwegian bulge, strike the Baltic, and take a southerly and westerly course along the eastern shores of that sea. The birds from Lapland and North Scandinavia may follow the western shores. These two streams will converge near Bornholm and Rügen, and still travelling west, rather than north, when confronted by the coasts of Zealand or other Danish islands, will cross the comparatively narrow neck of Schleswig-Holstein, and strike the valleys of the Eider or Elbe, and so reach the North Sea. Here they will meet birds which have coasted south along the Norwegian shores, and the combined streams will pass within a comparatively short distance of the isolated island of Heligoland. A south-western route, still following coast-lines, leads the birds past the Frisian Islands, when some follow the Dutch and Belgian shores to France, and others, still trending westerly, cross to East Anglia.

So far the migrants will have followed coast-lines, taken a distinct route, and there can be no doubt that, in spite of Gätke's assertion to the contrary, the position of Heligoland, in the line of this southbound stream, explains why such large numbers of birds visit the island.

Although we cannot deny that this is a very busy avian high road, we are faced with certain facts which cause us to seek for other sources of immigration to Britain. East Anglia and Kent, it is true, receive a great volume of direct immigration, but migration is very noticeable on the Yorkshire and Lincolnshire coasts, and certain Scottish areas are well supplied with visitors. Further, there are many most interesting records

worked out by Dr. Eagle Clarke, Mr. N. Kinnear, the Misses Rintoul and Baxter, and others, which prove that very large numbers of Northern European and Asiatic birds reach the Shetlands, Fair Island, the Isle of May, and the west coast of Ireland. It appears that these birds, travelling south-west along the Norwegian shore strike out across the North Sea, and follow a westerly or south-westerly course either to our East Coast, or actually round the British Isles towards the Iberian Peninsula and Africa.

We must not ignore the fact that another stream of migrants leaves the coast, if it has been coasting, and ascends the Rhine Valley towards Switzerland, where it crosses the watershed by some of the lower cols to the Rhone Valley, and by this due south river route reaches the Mediterranean, where coasting may again be the order, though the bulk of the birds now seem to move south-easterly towards the Nile Valley. Dr. A. L. Thomson (122) quotes the experiences of von Schweppenburg, Mr. R. E. Moreau, and Admiral H. Lynes as showing that there is very considerable passage across the desert as well as along the Nile Valley. He suggests "that there may be no special concentration along its course, and that it is observers rather than birds that are restricted to the narrow route!" Although it seems more reasonable to expect a greater volume of migration along a fertile river valley than across foodless areas, and the passage along the former would be slower and more easy to observe than in desert country where the birds would be little noticed except in oases, I believe that the abundance of observers and facilities for observation in certain places has much bearing on hypothetical fly-lines. Even in our own small islands a well-watched reservoir, river valley or sewage-farm in any part of the country produces the suggestion of a regular fly-line or restricted route.

But let us not forget one important point, that it is absurd to lay down hard-and-fast routes, or to make dogmatic assertions

about any particular species. Individual choice, circumstances, and weather conditions may explain variation of routes followed, and individuality, as exemplified by action, is a very real and important factor in the movement of birds. Thus from one area some birds may go south whilst others travel west, some follow the shore, others trek across country. Also group or family custom or tradition may vary according to place of origin. Swallows from inland Yorkshire may travel east to the coast, and by way of Spurn reach Lincolnshire and so cross the Wash to Norfolk, but others may elect to follow the Humber and Trent to the Severn Valley and Bristol Channel, or at any point diverge to suitable reservoirs, reed-beds, willow-beds, or lakes for food or nightly rest. And the Swallows from Ireland may not dare the long direct sea crossing, but, making for Pembroke or Cornwall, trail easterly until some impulse, what we cannot say, urges them to cross to France. Whereas the Swallows from Surrey or Kent do not always at any rate, make east to the narrow Straits of Dover, but west until they reach some point of departure for Brittany. At any time there may be variation of route caused by direction and force of wind, the force being the more important factor in deciding which route to follow.

Visible and Invisible Migration

The wind factor regulating migration has caused much controversy and many emphatic assertions, one being that when birds travel they do so either against the wind—that is fly in the teeth of the wind—or with it on the right or left flank. It has, indeed, been argued by one theorist that the bird is guided in the right way by keeping the prevailing wind on its flank. Others, Gätke amongst them, insist that a following wind would ruffle the bird's feathers, and that they must face the wind to keep their plumage in place and to prevent themselves from being bowled over by gusts from behind. Here again there is

a certain amount of truth, but a far greater misconception. The great advance in our knowledge of aviation has shown the absurdity of many ideas of avian flight. The bird can be and is carried on a moving current of air, and any exertion that it makes speeds it up, and helps it to travel faster than the current which bears it. An aeroplane travelling at 60 m.p.h. may remain stationary over any given spot if the wind is travelling 60 m.p.h. in the contrary direction, but if the wind is behind its speed is doubled.

But, it is argued, this is absurd, because birds are constantly seen migrating against the wind, and seldom travelling with it. Exactly, and that is a very important point: are we sure that we often, if ever, see normal migration? One thing which has impressed me greatly is the vast number of birds which we do see occasionally, and the very much vaster numbers which must pass unseen.

If in autumn we visit some of the many long stretches of beach on our varied coast-line, we see great flocks of birds scattered over the wet sand if the tide is low, or massed above high-water mark at full flood. These gatherings are, as a rule, mixed congregations—Oyster-catchers, Curlews, Godwits, Ringed Plovers, Dunlins, Sanderlings, and Stints, but usually with one species outnumbering all the others, the Knot. A flock at any one spot may contain anything from one to three thousand birds, mostly Knots, and these, the most gregarious of all Waders, are so densely packed that no yellow sand shows between their grey bodies. They are packed like this on the Solway, in Morecambe Bay and the Ribble Estuary, along the sandy shores of Lancashire, in Cardigan Bay, the Bristol Channel, and the estuaries of Devon and Cornwall. On the East Coast the flocks are often larger; we find them in Budle Bay and other Northumbrian sands, at Teesmouth and in the Humber, the Wash, and in East Anglia; their numbers are sometimes amazing. I remembered seeing a Yorkshire beach several

hundred yards in extent, and fully a hundred in width, simply hidden by a grey carpet of resting Knots ; I remember a long line on one of the Dee sandbanks, which, from a short distance away, looked exactly like a grey stone wall erected by the edge of the deepening gutter. To estimate the numbers is impossible.

The first flocks of young, buff-breasted birds usually arrive in August, and these as a rule are departing when the mature birds come in. There are Knots in similar crowds passing down the Continental and African shores to the Cape, there are others in India, the Malays, China and Australia. There are Knots—what matter if they are of different race or species ?—in America from the Arctic to Patagonia. We see a great party rise, filling the air with a rush of wings, swarming like bees, and we imagine that we see visible migration. We have seen a few thousands, and they amazed us, but what about the millions, the countless hordes which have passed south, which are passing every autumn and every spring ? Who has any conception of how they travel, of where they come from, and where they all find food ? The glimpse we see is wonderful enough, but we know that there is far, far more that we never see.

The majority of species are seldom seen in mass, but we have only to think of the wide distribution of almost any migratory bird to realise that vast numbers must travel unseen ; the population per square mile of Willow-Wrens in England must be considerable ; there must be many millions of these little birds in the British Isles alone, and ours is but a fraction of the bird's breeding area. Who sees these hordes arrive and depart ?

Watch Swallows or Martins, day migrants, travelling past any particular spot when passage migration is in full swing. We count the stream per minute or per hour, and though the birds do not come in great rushes, we find that the numbers which pass are very large ; then we multiply this by the number of hours during which migration was noticeable, the

number of days, weeks, that it continued, and we marvel. But we forget that at other places in our land and in very many other lands the same or larger streams were passing. What we saw was nothing compared with what actually took place.

I believe that the majority of every species travel on suitable air currents at a height above our vision, and probably the air current is rapid, at a speed far beyond our computation. The majority, too, travel or appear to travel by night. We know this from actual observations at the lighthouses, when incredible numbers are lured within the lighted area by the revolving beams. We know it, too, from the fact that on certain nights continuous streams of birds are heard passing, and that now and again great numbers meet with disaster, by striking lights, wires, or buildings. Yet, extensive though these calamities may be, the numbers which avoid trouble are far greater.

These " rushes " at the lighthouses are said to take place on " suitable nights for migration " ; I believe that they are indication of movements on unsuitable nights ; the birds are visible or audible just because they are in difficulties.

Again, numbers of migrants are seen coming in from the sea, flying laboriously against the wind. I believe that we see them *because* the wind is contrary, and that during the crossing they have met with adverse winds, and dropped to a lower altitude to avoid trouble. Often birds fly close to the waves ; there is less to contend with than at a greater altitude. Birds surely do not fly against a wind for choice, but do so when there is no other hope of reaching a safe haven.

Were it not for the difficulties of migration we should see but little of it, though from time to time we find great congregations of birds resting or feeding after their journey. If we admit this fact—that what we see is abnormal—we can realise that broad front and route migration may be regulated by circumstances. A broad front movement may be started in a strong wind travelling in the desired direction, but when conditions

are unfavourable for speed at high altitudes routes may be followed.

If therefore the observation of normal migration is as a rule impossible, we are driven back to theory, but theory founded on observation, for we see abnormal movements and the gatherings of birds when resting or halting for food. Certain places are better favoured than others for observation. They may be resting-places where converging streams of migrants halt; they may be landing-places for oversea travellers, well furnished with bushes which shelter the birds from exposure; they may be food bases—sheets of water visible from above; or they may be isolated islands which are seen by the weary travellers.

We know what does happen—how these places are from time to time crowded with birds; we have to imagine how and why they are crowded. Thanks to the enthusiasm which overlooks or ignores difficulties, accounts of a number of the best bird observatories in the British Isles have appeared from time to time, but I am unconvinced that these are the only places where migration may be watched, or that they are by any means the only places passed by the moving armies. Dr. Eagle Clarke (11) calls Fair Island, between the Shetlands and Orkneys, the British Heligoland, for it receives visitors from the main stream of migration from Northern Europe. He visited this island repeatedly, studied it carefully, and was helped by other enthusiasts. His guess that it would be a favourable place for observation was confirmed by experience, but we must remember that these birds which visited Fair Island were merely using it as a halt, and that all and more had visited the Shetlands on their southward passage, would pass on to the Orkneys, and thence to Scotland, or to the Hebrides and Ireland. It is, naturally, the isolation of the halfway island which makes it a convenient place for study; the birds when on larger islands or mainlands are less concentrated.

Dr. Clarke did not confine his attention solely to Fair Island,

but in his fascinating "Studies of Bird Migration" has given wonderful accounts of the migratory avifauna of such out-of-the-way spots as St. Kilda, the Flannans, and Sule Skerry. The abundance and variety of the birds which visit these islands prove that something more than accident carries birds so far from safer land travel. We can argue that there is a regular migration route which takes them so far out to sea, but that immediately makes us wonder why the birds should lengthen their voyages to follow so dangerous and uncertain a track.

At the mouth of the Firth of Forth is the Isle of May, which the investigations of Miss Rintoul and Miss Baxter have made into a second British Heligoland. Here again birds alight, but how many alight on the Scottish coast and, in the wider area, are overlooked?

Farther south, at the southern extremity of Yorkshire, is the sandy peninsula of Spurn, well supplied with bushes; somewhat stunted elders are surrounded by dense tangles of sea-buckthorn, ruinous to clothes but splendid protection for weary birds. It is a refuge for oversea arrivals and for coasters from the north. Off the Norfolk coast is Blakeney Point, long known as a happy hunting-ground for the gunner and collector, until it was placed under the protection of the National Trust by the Norfolk and Norwich Naturalists. This ridge with its suæda bushes shelters birds, both incoming immigrants and coastal travellers; and now Scolt Head, also protected by the Trust, is proving as interesting a spot.

And so we may travel round our shores, finding spot after spot where migration has been studied—at the Kentish Knock Lightship and Eddystone by Dr. Clarke; at Dungeness, Scilly, the Long Ships, at many places in Ireland by a number of trained scientific observers; and on headlands and in bays by men who know their work, but whose work is less known. In most cases the most interesting occurrences, both of birds in mass movement and of rare individuals, have been at the

lighthouses, for these lures hold up and often slay the passers.

At first sight the abundance of the birds at these various spots would lead to the conclusion that most birds when on migration travel along our shores, and probably this conclusion is correct; but we must not shut our eyes to the work that has been done inland, for in certain years large numbers of birds, passerine as well as ducks, waders and gulls, are observed at any large inland sheet of water, and especially on any good sewage farm. If we begin working out routes of migration in the British Isles, we shall have to include lakes, sewage farms, and river valleys in all directions. We shall throw ourselves open to a sarcastic criticism similar to that of Herman.

Is there, then, any explanation? I believe that there is, and that it hangs on two important facts—first, that broad front migration is much more general than is admitted; and secondly, that what we see is not normal migration.

Let us imagine what may happen. A great army of birds, not necessarily in anything approaching close formation, but in flocks of varying size, leaves the Scandinavian coast somewhere north of Bergen. It may leave it from many different points, and many parties may have no idea when they do leave the land. These birds have risen to just that altitude which will give them a steady favourable wind; it need not be high to be above our vision. They fly in a southerly direction, but, unconsciously, are drifted westward, some parties further west than others. If the conditions are favourable they are carried round on a circular current, and, if these winds are steady and strong, at considerable speed. They may, when weary, make land in Scotland, Ireland or, if conditions are specially favourable, not until they strike the French coast.

But this army of travellers has not started from one spot but many, and its success or failure is regulated by the prevailing

meteorological conditions, not at the time of starting, but during the journey. Throughout the journey the birds meet with winds of varying strength and direction, and we know that in any cyclonic or anticyclonic system the wind at one altitude is not necessarily the same either in force or direction as at another. Thus birds at one altitude may be safely carried to their destination, whilst others which have not entered the same current may meet with difficulty or disaster.

Undoubtedly most migratory journeys are nocturnal, though there may be many successful diurnal travels accomplished above our range of vision. At any rate it is as a rule in the early morning that migrants are seen coming in or on the move. After the night flight, when the birds are weary and hungry, if they happen to be in sight of land they will drop to a lower elevation and endeavour to alight.

Should there be any great extent of land below them, they may alight anywhere and be unnoticed, but when only an island is in sight that must be their refuge. Thus many birds may make for this refuge, and, should it be one on which an ornithologist is watching, the occurrences are noted and recorded. But there are many other islands, and many wide tracts of country, where there are no watchers, and these are omitted from our "routes" merely because we know nothing about them.

Inland the same thing happens. Now that municipal sewage schemes provide food bases and willow-beds in all parts of our land, we are learning that if these spots are regularly watched by some one who knows a bird when he sees it, there is not one that has not something to teach. The same applies to reservoirs and lakes, though the variety of visitors is not so great as at the sewage farm. It is true that these farms, in order to secure a suitable outfall, are in the valleys of rivers or streams of considerable size, and it will be argued that the birds were following a river fly-line. That is possible, but it simply means that

practically every river valley is a fly-line, and that is explained by the fact that where there is water there is food for birds. These birds which are noticed at the sewage farms are, as already stated, of different orders. It is not surprising to find large numbers of Swallows and Martins hawking above the tanks for small insects, most of which have aquatic larvæ, or to find Pipits, Wagtails and Larks on the sludge; nor is it astonishing to see huge flocks of Finches feeding on the seeds of the numerous weeds or amongst the roots in the cultivated fields. But the Waders which come to the tanks, and they come with great regularity, are not all Lapwings, Redshanks, and Snipe, birds which we expect to see in inland haunts, for Ringed Plovers, Dunlins, Sanderlings, Knots, Godwits, Curlews, Whimbrels, and many rarer birds of the coast are met with in autumn, and, to a lesser extent, in spring on farms in the Midlands and other places far from the usual haunts.

Black-headed Gulls we now recognise as inland birds, but to the lakes and settling tanks the Lesser Blackbacked Gull, and sometimes other species, come on both migrations. We expect the Black Tern to visit inland waters, but the Common, Arctic, and Lesser Tern are regular visitors, and sometimes the Sandwich Tern takes a cross-country course.

We are surely justified in believing that something similar to what happens to oversea migrants explains the frequency of passage birds in these inland spots. Parties passing over, either by day or night, sight the water and drop for food or rest. Apparently birds of one species usually travel together, and, I believe though I cannot prove it, on a broad front or at any rate a wide track. I have on several occasions found that if we notice such birds as Ruffs or Greenshanks on the Cheshire waters or farms, the same species will be seen about the same date in Yorkshire, on the Hertfordshire or Buckingham reservoirs, and, once at least, on the Reading Sewage Farm. Very few of these inland stopping-places can be watched with

any degree of regularity—they cannot compare with the daily observations of occurrences and weather conditions which are obtained from intelligent lighthouse-keepers—but even the casual visits paid by ornithologists provide data of importance.

But whether at the lights or the sewage farms or reservoirs, we see, I feel sure, only the fringe of migration, and, as is generally admitted, the best days for observation at the lighthouses are the worst days for the birds. The biggest rushes occur when the birds are in difficulties.

To return to the assertion that birds migrate against the wind, and often fly over the sea at a low elevation. Inability to continue flight at a high altitude would surely bring the birds lower in order to seek a better stratum, and the lower the flight, as a general rule, the less the force of wind to be contended with. Further, it must not be forgotten that in either anticyclones or cyclones there are descending currents; unconsciously the bird may lose its elevation, and thus get into an unsuitable current.

Dr. Eagle Clarke finds that the force of the wind is of more importance than its direction; birds will not migrate against or with a strong and uncertain wind. An examination of his observations at St. Kilda, where the weather is stated for each day, shows that the birds usually came in autumn with northerly winds, though sometimes these were from the west.

This matter of wind I will deal with in more detail when discussing some of the experiences of visible migration, but there is another point which is often overlooked or misinterpreted—the direction of flight. When the birds are travelling, as they frequently do, against the wind or with the wind on a flank, they cannot be sure of keeping the course which they would follow under more favourable circumstances. With a head wind they are inclined to tack; we see that constantly when birds are merely moving from place to place without any

idea of migration. Watch Rooks or Daws when passing to and from the breeding colony, feeding-ground or roosts ; they swing up into the wind and glide down it, tacking to keep in the right direction. Watch Kittiwakes following a steamer ; they cover far more aerial space than Herring Gulls : they keep up a pendulum flight with occasional poises ; again and again they slide down a semicircular path from port to starboard or vice versa according to the wind, coming up into it with a fine adjustment of wing which gives that pause before repeating the downward swing. But a bird making steadily in one direction with a wind on the flank drifts sideways though it may keep its head in the right direction ; Gätke was well aware of this fact, but insisted that it was intentional. He affirmed a direct east-to-west flight from Heligoland to the Lincoln coast, and that when the birds were troubled by a south wind they headed it and intentionally flew sideways. Dr. Clarke was unable to find evidence in support of an east-to-west flight, either intentional or accidental, but he does show that a diagonal drift flight is common.

This problem of visible and invisible migration leads us to ask, at what height do we know that birds can fly ? We can ignore the theories of Gätke, for he had no proof, but during and since the War we have learnt much from Air Force observers and pilots, and these have been collected and examined by Mr. C. Ingram (126) and Colonel R. Meinertzhagen (127). In my " Migration of Birds " (15) I cited the observations made with astronomical instruments and by astronomical calculations, mostly in America. I referred to the work of Dr. F. W. Very, who has kindly supplied further information. He secured apparently reliable estimates of the height and speed of birds that were passing across the face of the moon ; the greatest speed was 134 m.p.h. at 2000 feet ; he says that " though the wind at the surface was only moderate the birds were probably flying " in an upper layer of air of great velocity." Mr. F. W.

Carpenter (128) estimated the height of birds observed at various altitudes, the lowest 1200, the highest 5400.

My own information from observers is slight. Captain A. M. Wynne met with Golden Plover at 6000 feet during a bombardment, when they might be expected to fly high, though he seldom met with birds at above 1000 feet. Another friend told me of Lapwings passing in a flock at 6500 feet, whilst a third had seen Starlings up to but not above 3000 feet. "Observer" in the *Field* mentions Swallows far above him when he was flying at 9500, and estimated that they were at least 10,000 feet above sea-level.

Mr. Ingram's records are all from North-Eastern France between 1916 and 1918; he cites fifteen observations of Lapwings at altitudes between 2000 and 8500 feet, and Colonel Meinertzhagen adds one at 8000 feet observed near Eastbourne —a flock of about 400 birds travelling S.S.W. at the beginning of October. It is fair to state that one of these observations does not support the argument that birds benefit by high flight, for the Lapwings were flying at 6000 feet at 50 m.p.h. air speed against a strong north wind, though the surface wind was south. Colonel Meinertzhagen also quotes the experiences of Captain Portal, who saw a large flock of Lapwings flying due north at 5000 feet, when the ground wind was light from the south, but at 3000 feet it was blowing 30 m.p.h. from north-west, and at 5000 feet was nearly due north. Against this is another record of the same species at 6000 feet flying north on a 25 m.p.h. wind from the south, and a flock of Geese or Duck travelling south at 3000 feet with the wind, 50 m.p.h. N.N.E. Geese were observed at 8000 and 9000 feet, two supposed Cranes at 15,000 feet, a flock of small birds described as Linnets at 10,000 feet, Waders at the same altitude, and Sandpipers at 12,000 feet. Records of Rooks are given at 6000 and 11,000 feet, and many of various species at over 3000 feet.

Colonel Meinertzhagen says that "all pilots agreed that

birds were seldom seen at over 2000 feet or so, and that if birds were observed it was a noteworthy phenomenon." He thinks that if birds had been about they would "have been spotted by the trained observers watching for hostile aircraft," but from what Captain Wynne told me I should doubt if this is the case. It must be remembered that these men were looking for aircraft, not birds, and that the average man who is not an ornithologist notices what he is looking for when walking along a road, but sees birds and other objects without knowing that he sees them. Much of our sight is reflex.

Among the conclusions from this interesting paper are that the bulk of migratory flight is conducted below 3000 feet whether by day or night, and that flights over 5000 feet are the exception Further, "that under normal conditions different species travel at different altitudes, some very low and some invariably high, but that during abnormal weather conditions all birds are apt to fly low." Yet granting that these conclusions are correct, at what altitude can we see birds? And how many of us do watch the sky so frequently that we should notice many passing birds, even within the range of normal vision?

Birds, I still believe, migrate in many cases above the range, or pass within range unnoticed, especially at night.

MIGRATION TO THE BRITISH ISLES.

Migration from Northern Europe.

At the risk of repeating what I have said with regard to the irregular migrants, I wish to emphasise the source of origin of those birds which reach the British Isles, not for nesting purposes, but as winter visitors or passage migrants, and we can treat them best as autumnal immigrants, bearing in mind that a bird's home is the place where it rears its young. Those which are purely summer visitors have the best right to be

called British birds, for they nest here and go elsewhere for the winter months.

The majority, and a very large majority it is, of these autumn and winter immigrants come to us from Northern Europe, and by that we mean northern Russia, Scandinavia with Lapland, Denmark, and the Baltic Shores, and for convenience we must include the islands of Novaia Zemlia and Kolguev. The route taken by birds from Spitzbergen is uncertain, but probably they too follow a more or less direct southerly direction towards Norway, some resting on Bear Island on their way.

Undoubtedly a very large stream of migration flows from Scandinavia and the Baltic across the North Sea and strikes our Islands at various, and I would add varying, points between Shetland and Kent. That there are regular direct tracks followed without exception across the North Sea is unproved, and it seems more likely that a general south-westerly course is steered, which is altered in its diagonal by meteorological conditions, including force and direction of wind; this will determine the particular point where these immigrants will reach us, or *over which they will pass unnoticed*. Again I am convinced that certain years which we consider bad ones for migration, because we do not see many birds on our shores or inland, are really good ones for the migrants; the explanation surely is that the stream has remained east of our Islands, following the eastern shores of the North Sea, and so, with the exception of a few which pass along the coasts of Kent and Sussex, the usual passage birds noticed in Yorkshire and East Anglia, are absent. The majority miss Britain altogether. That this theory will be disputed because of the lack of proof, I have no doubt; but there is proof, from observations along the shore of the Bay of Biscay, as well as on the coasts of Normandy and Brittany, that very large numbers of birds pass which are not observed in any part of Britain in the same abundance.

Dr. Eagle Clarke, whose long experience and careful study of migration have added so much to our knowledge—he undoubtedly heads the list of authorities on British migration—finds that the most favourable meteorological condition for migration between North-Western Europe and our Islands is when a large anticyclonic system has its centre in North-Western Europe and its influence on both eastern and western shores of the North Sea. This, he says, applies alike to autumn southward and spring northward passages. He emphasises the fact that in autumn the conditions in Scandinavia may not be the same as farther west and east, and if a low-pressure cyclonic system approach, strong winds may meet the travellers before they reach land and cause difficulty or disaster.

My own experiences are so limited that I do not dare to dispute this statement, but merely ask, are we sure, when few birds are noticed, that they have not passed swiftly and safely overhead? It may be that under these "suitable" conditions when many birds are seen, flying low or alighting on the shore in large numbers, the conditions are really unsuitable for swift, high flight between point of departure and destination. It may even be that when strong winds are an apparent bar to migration, there are currents at a higher elevation which, though strong, are an actual help to rapid and swift transit.

In October, 1919, a large number of Rooks and other birds met with disaster on or off the coast of Norfolk. The late J. H. Gurney (12), describing his experiences in 1919, reproduced the weather charts for October 29th and 30th when the unfavourable low-pressure system was moving south. On the 27th the wind blew strong from the north, after a passage of Rooks and Starlings had been more or less continuous since the 23rd; on the 29th it was from the E.N.E. at force 5, and on the 30th veered to E.S.E. and rose to force 8. On November 1st the shore was littered with dead birds. Commenting on this disaster Mr. D. W. Horner says, "The

explanation of birds starting to migrate across a stretch of sea when weather conditions are apparently unfavourable seems to be that they take their migratory flights at great altitudes, where the strength and direction of wind may be quite different from that of the surface current. This is what seems to have occurred on the Norfolk coast, where it is pretty evident from the weather charts given that the strong easterly winds were, as is frequently the case with such winds, only surface currents, the upper regions of the atmosphere being probably relatively calm. The argument, therefore, is that the Rooks, having crossed the North Sea in this calm, descended unexpectedly into a gale and so met with disaster."

This argument seems sound, but it suggests something more, for it is evident that whatever the conditions when the earlier Rooks left Scandinavia, those which arrived on the 28th to 30th, at any rate, must have attempted to cross in what is considered an unfavourable system. Also we see that the direction of the wind was favourable on the 28th but unfavourable on the 30th, although on both dates the wind was high.

Once again we are faced with the fact that in upholding this theory we cannot supply proof, for we are, if our theory is correct, dealing with *invisible* migration, whilst those who see apparently normal movements, and correlate them with meteorological conditions as registered at a low altitude, can supply actual facts. I can merely reassert that under any conditions we see only the fringe of migration. A great rush, with streams of birds passing for hours, would not empty North-Western Europe, even were simultaneous rushes noted at all problematic fly-lines.

When we consider the minute observations made at isolated islands—Heligoland, Fair Island, St. Kilda, good bird observatories—what proof have we that when no movement was noted the birds did not pass over without halting, at too great an

elevation for sight or hearing? Over and over again it has been contended that though air-mastery has advanced so greatly high-flight migration has not been observed by airmen. As a matter of fact it has been noted occasionally, but the wonder is that it has been observed at all. A very small number of airmen take any interest in birds, and when flying high it is neither easy to see a bird above against the glare, nor below against the dark background of the earth.

Although I do not agree with certain of Seebohm's migration theories (13), his observations at Heligoland seem pertinent "The theory that migration ordinarily takes place at high elevations is supported by the fact that it is only in dark and cloudy weather that migration on a large scale is observed. It is supposed that the landmarks being obscured by clouds, the birds are obliged to descend to see their way, for it is observed that as soon as the clouds begin to break, the migration apparently comes to an end. On dark nights the stream of migration suddenly stops when the moon rises." Under certain circumstances migration is not observed, the birds having passed "at high altitudes, it may be, or by other routes." For nearly a week during his visit in October, a strong west wind held up migration; very few birds appeared on the island, but when the wind went round to the S.E., and the night was dark and rainy, he had an experience he never forgot, until the clouds broke and stars appeared, when suddenly "migration came to an end or continued above the range of our vision."

An observation of W. Warde Fowler's (14) of spring migration, made more than thirty years ago, seems to have bearing on this point. "During the ten days I was at Bordighera, from April 13th to 23rd, I only once saw the birds arriving in any numbers on the coast, and that was in wet and cold weather, with a wind from N.E. Yet all the time there were signs enough that they were crowding in—the olive groves being full of them, and the species changing almost from day to day. The bad

weather apparently kept them low, and brought them to my notice."

Migration from the North and North-East.

So far as we know the geographical range of the various species which come from the North and North-East, we find that the area of origin of birds which travel in company is very wide. This to some extent supports route migration, for the birds from afar, keeping to a known highway, pick up companions from less distant countries. No doubt at the start these parties or bodies of migrants are small, but tributary streams flow to the main channel and swell the flood; this is certainly noticeable where the migrants follow coast-lines. Even when the immigrants have reached the British Isles the flocks are augmented by emigrating summer residents. In many cases, however, when migrants have been travelling past the lighthouses, one species will predominate for a considerable time, and then its place be taken by another; the composition of the migrating host alters constantly.

The majority of these Northern birds, including our summer visitors, winter in Southern Europe or Africa, some going no further than the Mediterranean Basin, and others cross the Equator and reach the southern limits of the continent. Some follow the western shores, some make for the Nile Valley, and some are apparently content to rest in the Tropics.

Immigration from the North-East includes birds of various Orders, many having Siberian origin, whilst some have a wide Arctic range; forms closely allied, if not identical, occur in Arctic America, Europe and Asia. In the section dealing with habits I have endeavoured to supply some indication of the area from which these birds come.

Dr. H. Weigold (16) kindly sent me his eighth and, so far as he is concerned personally, last report of the Heligoland Biological Station; in this he refers to the supposed routes

over Heligoland, one coastwise in a south-westerly direction, and the other by an inland Holland-Rhone-Mediterranean track, often called the Meuse-Rhone route. He states, "I do not attach as much value to the river and coast routes as others." Certain birds ringed in Northern Germany, the Song-Thrush and Ring-Ouzel for instance, have been traced at some distance from this river route, whilst one instance that he mentions, a Blackbird ringed in Silesia and recovered on the Gironde, suggests a crossing of the route at right angles. He adds that it is a mistake to treat these exceptions as abnormal, as "they are priceless indications for science to follow up." Dr. A. L. Thomson (122) expresses somewhat similar views on this matter. "On the subject of the nature of the routes which are followed information is, however, somewhat scanty, and it is probable that on the whole too much has been made of the idea that migration is restricted to certain narrow and well-defined flight-lines." Dr. Weigold, too, does not support the idea that birds by choice travel in a head wind; when telling of the steady stream of passing birds in the autumn of 1923, he mentions several blank days when strong south-west winds held up the traffic.

Migrants from Central Europe.

In addition to the stream from the North-East a number of species reach Britain from Central Europe. Amongst these are Rooks, Starlings, Chaffinches, Tree-Sparrows, Larks, and Lapwings, but as they have a more northern range it is difficult to guess the origin of individuals, and often of flocks. The Carrion-Crow, Black Redstart, Hoopoe, Tufted Duck, and Black-necked Grebe, however, have a more southern range, and all are more or less regular winter visitors or passage migrants. When in autumn flocks arriving from the east or south-east cross the path of birds of the same species which are travelling south or south-west, we can safely guess that the

two streams had origin in widely separated areas. This phenomenon has been observed with Larks, Starlings and other species.

Migrants from Iceland, Greenland and Arctic America.

Undoubtedly many immigrants come from the Færoes, Iceland and Greenland; we need mention only the White Wagtail, Greenland Wheatear, Iceland and Greenland Falcons, and the various Icelandic forms of the Dunlin, Redshank and Snipe, as well as the Whooper and many Geese and Ducks. For aquatic birds, of course, this route presents no difficulties, and all Waders can, if they wish, rest on the water; but for continuous oversea flight for Passerine and other land birds, even from America, there is no stretch greater than is accomplished annually elsewhere; the longest sea passage is not much over 300 miles. We recognise that many southern species travel out of their way to reach our Islands, and an American bird, though it might begin its journey west or south-west of Greenland, could by travelling east or north-east reach this great tract of land, and then by stages, Iceland, the Færoes, and the Shetlands, reach the British Isles without having so long a cross-sea journey as is taken by many weak-winged birds across the North Sea, or from Ireland to Spain.

The argument that this or that species has not been noticed in Greenland, or has been seen there only as a straggler, is not conclusive, for the number of ornithologists who have studied the Greenland avifauna is not large, whereas the area to be studied is immense. We cannot, however, shut our eyes to the fact that many American birds have reached our shores by assisted passages, either accidental or intentional, and that numbers of "specimens" of purely Nearctic forms have been palmed off on the credulous British collector as genuine British-taken birds. This element of accident and fraud explains why

many circumstantial and perhaps correct records have been treated with great caution.

Though we must admit that it is hard to believe that certain Passerine and other birds from America, which have been discovered in the British Islands under circumstances which suggested more or less direct flight, had received no aid, there are others, long-winged Plovers and Sandpipers, which, even if they do not rest on the water, are capable of long-sustained flight. W. W. Cooke and others have shown that two forms of the Golden Plover travel, at any rate in autumn, by oversea flights of from 2000 to 2500 miles. The American Golden Plover passes south through Nova Scotia from its breeding-ground in North-West Canada, and, according to the wind, travels direct to the West Indies or to the Guianas, sometimes halting at the Bermudas, but often passing some 400 miles east of these islands. It winters in the Argentine, and returns in spring by a more direct and, except for the Gulf of Mexico, overland route. In six months it traverses some 18,000 to 20,000 miles ; and its continuous sea flight may be well over 2000 miles. The Pacific Golden Plover, nesting in Alaska, takes a direct flight over an islandless sea of 2400 miles to Hawaii, where many winter, though others proceed as far south as the Low Archipelago. These long flights cannot be doubted.

Migrants from South-East Europe.

The occurrence of birds, not only on our south coasts, but in far northern islands, whose ordinary breeding area is in South-East Europe or South-Western Asia, and whose migrations as a rule trend towards the east, is most puzzling. Most of these are mere stragglers, and we could explain their presence by saying that young and inexperienced birds were devoid of all power of orientation and had lost themselves. But this would not satisfy us with a number of species which have

occurred again and again. The Rose-coloured Pastor, Wood-chat, Bee-eater and Little Egret are good examples. Even where we condemn the inclusion as British on such slender evidence we should cease to be insular, and see what the distribution of the species is in other European countries, and in many cases we find that the bird is a frequent, if not regular, wanderer to the west or north-west.

Migrants from Africa.

When we find species occurring in Britain whose home is in Africa the difficulty is even greater than with the Southern European birds, for here are species which have apparently reversed the rule for Palæarctic birds that the breeding area is always north of winter quarters. The Cream-coloured Courser has been recorded in Britain more than twenty times, the Western Desert-Chat about a dozen.

Migrants from the Southern Hemisphere.

The occurrence of certain pelagic birds, whose home is on Atlantic or even Pacific Islands, as a rule south of the Equator, is less surprising, when we realise that the birds nest in our winter, and wander north, chasing the sun, in their winter—our summer or autumn. Some of these may follow a regular northward migratory direction, and others be merely oceanic wanderers; they come to our seas but seldom intentionally to land.

Although it is evident that meteorological variations influence the volume of migration to be observed at any particular spot, other factors undoubtedly function. Almost every year we hear it stated that this or that species has had a good or bad year, and though this may refer to the nesting season in our islands it is evident that, if it be true, it will apply equally well to the nesting areas in other countries. Usually these statements are made by observers who have knowledge of a more

or less restricted area, and refer to imagined increase above or decrease below the normal, and the increase or decrease may be due to purely local conditions. But in some cases this fluctuation, steady increase or decline, is founded on observations made throughout our islands, and various explanative theories are suggested, but it is seldom that the most likely explanation of all, inter-specific competition, is mentioned.

Where the competition is direct—a struggle to exist between a predatory species and the ones upon which it feeds—the main factor is the amount of energy and care expended on the preservation of game. But supposing that a diminution of predacious species, Hawks, Crows, or other bird-eaters or egg-thieves, means an increase of Sparrows and other Finches, and of certain insectivorous and so-called useful birds, the consequences do not end with the annoyance or benefit derived from the abundance ; the species which benefit most will monopolise food supplies and nesting haunts, and the less prolific or adaptable birds will suffer. Thus the increase of a common species means diminution of a rarer kind. A similarity of habits and food increases competition. The undoubted increase of Swifts is probably the cause of a decrease of Swallows ; the supposed neglect of Britain by the immigrant Quails may really be a reply to encouragement given to the Partridge ; and if the Lapwing is deserting some of its former haunts may it not be that it cannot compete with the very abundant Black-headed Gull ?

The argument that this refers only to competition during the nesting season of migrants is not sound, for the struggle for food may be with other birds in winter quarters, and thus the numbers which survive to return in spring be diminished. Again, the cause of the destruction of food either here or abroad may not be a competing bird, but predatory insects, methods of control, or natural phenomena ; many factors regulate food supplies.

BRITISH BIRDS.

BEFORE considering what are or should be the correct names for the birds which are included on the British list, it is necessary to define the expression—British Birds. Whatever may be personal opinion about the claim of this or that species to be called British, we must acknowledge that it is not only wise but right to fall into line with the conclusions of the majority of experienced ornithologists, who have devoted years of careful investigation to the subject.

No difficulty arises regarding birds which nest in Britain or which have nested within ornithologically historic times ; that is to say, if there is satisfactory literary evidence of their having nested in the past. It is immaterial whether these nesting species remain with us all the year round or leave our Islands for more southern winter quarters. Equally just is the claim of any bird whose normal geographical range includes the British Islands, though the breeding quarters may be remote. If the bird visits us after its breeding season, either to spend the winter, or to pass along our shores or through the country with any degree of regularity, it is surely a British bird. The difficulty begins when we deal with those species which are variously termed vagrants, accidental visitors, lost or storm-driven wanderers, and a very large number of the birds on our list have been described in this manner, although experience has proved that many that were formerly classed as accidental visitors are more or less regular on passage migration. With these claims I will deal in detail.

British ornithologists are agreed on the general principle, that if any bird, wheresoever its geographical range, has reached us unaided, that is that it has wandered here without human help, it shall be included on the British list, even though only a single occurrence may have been recorded. But the issue is more complicated than is at first apparent, for the ever-growing interest in birds—we may justly call it love of birds—has created exceptional conditions.

What, in the first place, do we mean by "unaided"? If, say, an American bird or an African species wanders or is carried out to sea by wind, and takes temporary refuge on a passing vessel, resting for a few minutes, a few hours, or a few days, and then continues its flight and finds refuge on one of our islands, must we include or exclude it? Any one who has taken long or short sea voyages must have met with instances of birds resting on boats, and where this bird happens to be of a normally migrating species no difficulty is presented; it is merely one individual that has saved itself from the perils which face every migrating bird. But on the list, or excluded from the list, are a large number of birds, mostly trans-Atlantic species, which have undoubtedly flown in from the sea. How are we to be sure that those which are included as genuine visitors have not received ship-borne aid, and why should others be rejected because their known or estimated wing power is so feeble that we—or some of us—believe that they could not have travelled so far? After all, every man, or body of men, may have an opinion, but we know very little about the endurance of birds, nor how much or how little they may be aided by physical conditions. We can say that probably this bird came without help, or that one had an assisted passage; we cannot be sure.

Another and even more difficult problem arises from the fact that bird lovers have very different outlooks on the question of geographical status. The habit of keeping birds in cage or

aviary has great antiquity, and the importation of large numbers of foreign species carries with it a certain amount of leakage ; birds escape or are intentionally released, and on being recaptured or shot may cause confusion. When the bird is a well-known cage bird, a Parraquet, a Waxbill, or a Brazilian Cardinal Finch, all of which as escapes have come under my personal knowledge, there is no difficulty ; but if the captive or victim is say a Sprosser or a Hoopoe, how are we to tell ? I mention the last bird because one was brought to me alive, having been picked up wounded. As it was young I made inquiries, and found that it had escaped from a small aviary, and had been shot at by some fool with a gun.

Even greater difficulties are caused by those who release introduced birds, or who keep foreign species in paddocks or on ornamental waters. Nowadays it is practically impossible to say if any unusual duck which is seen or procured is really wild, or has merely escaped from captivity. The behaviour of two Barnacle-Geese which appeared on an inland water, and the continued stay of a Ruddy Sheld-duck on another water, roused my suspicions, and in both cases I traced their origin to confinement. On the other hand, I was unable to find the owners of a Tinamou and two Californian Quails—the first shot and the other two captured—but had no hesitation in deciding that they had been introduced and probably released in the hope of swelling our list of game-birds.

Those who object to the habit of introducing alien species to any area have no right to be annoyed because it complicates their studies, but they have just cause for objecting when the alien species threatens existing forms. That introduction is dangerous is proved by the trouble in New Zealand and Australia which has followed the unnatural acclimatisation of a large number of mammals, birds and plants. We cannot afford to play tricks with nature. In Britain the accidental introduction of the brown rat, and many insects, has upset the

normal balance, destroying native species, and the intentional release of the Grey Squirrel and the Little Owl is a menace. Though it is affirmed that the establishment of the Pheasant has been a valuable proceeding, there are very sound arguments about the sacrifice for sport ; the coming of the Pheasant has meant great changes in our avifauna alone. The Pheasant is preserved by the loss of many native species.

A third cause of confusion is deplorable, and has been recurrent for very many years—the existence of deliberate fraud. Ornithological fraud is as old as the collecting mania, and indeed almost as old as the genuine desire to learn about birds. No sooner was it discovered that those who for the sake of making collections, and even for acquiring specimens for scientific studies, were willing to pay for specimens, than a certain number of traders exploited the purchasers. A rare bird for a private collection or museum had value ; the demand created a supply, and when the supply failed it was made up by bogus specimens. British-taken specimens were demanded, and certainly as early as the end of the eighteenth century, if not earlier, collectors were paying high prices for birds which had been killed in our islands ; skins were procured from abroad, were mounted in England, and sold to these collectors with untruthful data. Although it has been possible to throw light on some of the fraudulent transactions, all particulars of the origin of other specimens have been lost, and they can now only be treated with suspicion. Furthermore, unintentional errors crept in with regard to other specimens ; the particulars of their origin were handed down by word of mouth from generation to generation, and what one man stated was his belief was restated as fact by his successors. The exposure of a single fraud has far-reaching effect, for it throws doubt on all other specimens which have the same origin. A dealer who has misled in one case may have misled in many others, and thus the value (scientific, not pecuniary value) of some genuine records is discounted. The

discovery that decomposition could be retarded by cold storage helped these impostors, for a bird could be produced " in the flesh," and described as killed in any locality. Fortunately, some taxidermists will not stoop to deception. For instance, I was told in good faith that a Cape Pigeon—a bird which is always treated with suspicion—had been shot on the Lancashire coast, but, on inquiry from the man who mounted it, was at once informed that it had arrived in cold storage.

When a bird whose normal geographical range is beyond our islands is seen or killed in the British Islands, if there are no previous records, or previous records have been proved doubtful, the greatest care should be taken before it is included in the British list. If a number of these unusual visitors pass through the hands of one dealer or are obtained by one collector from any restricted area our suspicions are aroused, but when the same unlikely species turns up later, as several have done, on one of the more remote islands off our shores, we must recognise that what can happen where there are few observers is as likely to happen where many are hunting for rarities, and more likely to be noticed.

When considering the British list, now swelled by the British Ornithologists' Union to 496 different birds, we must decide for ourselves what we mean by a species. This large number includes a great many sub-species, and immediately we are faced with one of the most ancient difficulties of systematists, the divergent views held by those who are classed as " lumpers " and those who are cynically termed " splitters." The lumpers are those who believe that the same name should be given to a bird in all parts of its geographical range, even though in various places the majority for any area show noticeable differences in size and plumage. The splitters give a fresh name to each variation. This brings us to a difficult question, what are we to do about nomenclature ? Now the lumpers swear by a binomial, the splitters by a trinomial system. The

first say that a generic and specific name is enough for any species ; the second, that you cannot describe a sub-species or geographical race by anything but two specific names, the first to show its relationship, the second to indicate its place of origin. The result of this difference of opinion is paradoxical, for the lumpers become the splitters, and the splitters are really lumpers.

If we take one or two examples we find that the ornithologists of the last generation were as a rule lumpers, who were hasty with the newer school of more detailed workers. Several of the Titmice, for instance, were early recognised as having British forms which differed from their Continental allies. We find Seebohm using the names *Parus britannicus* for our Coal Tit, and *Acredula rosea* for the Long-tailed Tit, whilst he gave a full specific status to the St. Kilda Wren. The result of this recognition of geographical variation whilst retaining binary nomenclature is to increase the number of species, and thus the lumper becomes splitter ; whereas the grouping of all forms under one specific title, with the third name to indicate the particular form or race, is really the best method of lumping.

Because this minute systematic work does not appeal to some of us, who would rather see one living bird, and not " obtain " it, than examine hundreds of dead skins, we must not condemn it as useless. The segregation of geographical races on the strength of slight differences in shade or size of markings, often on an average of a very large number of specimens, does not seem to me to be worth the labour or the sacrifice of life entailed. Possibly my colour sense is deficient, but in certain of the so-called sub-species I honestly cannot see the difference, and as the workers themselves frequently change their minds as to the validity of certain races, I am not ashamed of this confession. Yet I do acknowledge that it means that a large number of these detail workers are striving to advance scientific knowledge, and that we can never tell what important results

may arise from apparently trivial and unnecessary labour. Mr. Balfour-Browne, in one of his Royal Institution lectures on insects, now fortunately published, said, "I believe that there is still an ancient Physical or Mathematical Society which, at its annual banquet, drinks the following toast: 'Here's to the Society; let no one ever do anything that is of any use to anybody.' This sounds a very selfish, unchristian wish, but it is the true scientific attitude—to do the work for the work's sake and never mind whether or not it is going to be useful." Though this particular way of studying birds does not appeal to me, I acknowledge that it has value.

Unfortunately ornithologists, like every other ologist, are men with varied ideas and with strong opinions. There is no agreement on certain rules as to species or subspecies, and there is no certainty that what is at present the opinion of the majority will have stability. Majorities usually begin as minorities. For long the White Wagtail and Pied Wagtail were considered to be perfectly distinct species, but now, on account of their certain common origin at no very remote period in the long history of evolution, they are classed as sub-species, the White being the type, the Pied an insular variety with a restricted range beyond Britain. The birds will interbreed and produce apparently fertile young, but so will the Carrion and Grey or Hooded Crow, and yet, according to the majority, these two Crows are specifically distinct. In my previous volumes on the "The Birds of the British Isles" I have included the various sub-specific races under the species heading, but in the list which follows hereafter I have given each sub-species its distinct space. Racial distinctions may be very apparent as in the two Long-tailed Titmice on the British list, or very difficult to determine as in the two Willow-Tits; they may be visible in the field as in the Pied and White Wagtails, or invisible as in the Continental and British Hedge-Sparrow, though distinct enough when we examine a specimen. They may be structural

or merely be colour phases, but I am not convinced that scientific workers as a whole realise the extreme variability of all animals, however much they say that they do, for colour variation may at any time be emphasised or obscured in the course of a few generations, especially on the borderland of two geographical races.

After all a geographical area is seldom bounded by insurmountable barriers, especially for birds which have the power of flight and are habitual travellers. Geographical Regions are man-made for convenience ; rather they are man-named, though it must be admitted that there is justification for their invention. The majority of the birds on the British list come from some part of that great Continental area known as the Palæarctic Region, which includes the whole of Europe and its islands, Asia southward to the Himalayas, the island group of Japan, and a portion of Africa bordering the Mediterranean. But we get some Nearctic or American visitors, and a few from oceanic islands south of the Equator, whilst the normal range of some of our regular migrants extends far in the Ethiopian and perhaps tropical Asiatic areas.

The importance for us is not the boundaries of the areas, nor whence or whither our migrants come or go, but why we receive so large a number of these visitors. It is our island position, on the western boundaries of a great Continental area, and neither at the extreme north or south of that area, but in the track of those birds which travel coastwise from the north to the south or vice versa.

Three lists of British Birds have been drawn up by expert committees of the British Ornithologists' Union ; the latest was published in 1923. In my previous volumes I followed the number of species and nomenclature adopted by the second list of 1915, but after much discussion and consideration numerous alterations have been made, numbers of the committee having reluctantly agreed that only by following certain

rules without deviation or exception can finality ever be attained. These rules were framed by the International Commission on Zoological Nomenclature, but even an International Commission is not infallible, and the unsettled points have caused far more confusion that was expected.

What is the real status of a British Bird? Do we desire a long list of species, based on obituary notices or mummies in collections, or a shorter but more interesting catalogue of nesting species and *regular* visitors? County historians compete for the fullest lists; far better to boast that in their area few birds have been "obtained." A National interest in birds is desirable, but we want something more—an International outlook.

Recently I discussed this matter with three keen Dutch bird protectors, M. Ad. Burdet, Dr. J. P. Thijsse, and Dr. P. G. van Tienhoven. The last named is most anxious for an International agreement. He deplores the shooting in Britain of birds which nest in Holland, and adds that every bird nests somewhere. The collector says that no harm is done by shooting a rare bird which does not nest here nor ever will; that is selfish and insular. The Spoonbill, Avocet, and Bittern are good examples of birds which survive in Holland through private and government protection; here they have no effective protection outside a few reserved areas where they are guarded by some society or private effort. We complain that in France and Italy our nesting species are destroyed when on passage. Have we any right to complain when we permit the destruction of the birds of other lands?

The League of Nations has many important activities; we should like to see International Bird Protection amongst them.

My experiences in Holland, where I was afforded every facility for studying the problems and results of bird-protection, greatly impressed me. We have on the British list a number of

birds which from time to time attempt to nest in our islands, and a number of others which in former years nested regularly but have now deserted us as summer residents. As explained in the last chapter, various factors may have aided the diminution or destruction of the species, but one of the reasons given for the desertion of ancient haunts does not seem to me conclusive. The usual explanation of the scarcity or absence of the Bittern, Ruff, Spoonbill, Avocet, Black-tailed Godwit, Black Tern and Savi's Warbler is that improved cultivation, reclamation of marshes, and drainage of fens have restricted their haunts. In a measure this is true, but there are still large tracts of suitable country where the birds make no attempt to nest, and a few well-protected areas where the Bittern has re-established itself—not survived—and where the Ruff has made one or two unsuccessful attempts to nest. But in Holland, especially in the island of Texel, drainage and cultivation of marsh land, where this is coupled with real care and protection of the birds, has increased rather than diminished their numbers of late years, though doubtless they are far below the numbers which once inhabited the undrained marshes. Large numbers of Ruffs, Avocets, Godwits, and Black Terns nest on wet though perfectly sound, drained polder, whilst Oyster-catchers, with us birds of dune and shore, nest freely in the pastures and grasslands. The Black Tern, usually looked upon as a marsh bird, nesting on rafts of vegetable refuse or treacherous mud, is quite established on firm ground, and is increasing.

Inefficient legislation in England, and the resulting persecution of birds by shooting and egg-robbery, has had far more adverse influence than drainage in most cases.

NOMENCLATURE.

On the fly-leaf of the "Hand-List of British Birds," published in 1912, is the remark, "Nomenclature is only a means, not an end, but without uniformity it is a confusion." What the four authors hoped to accomplish is still unattained; the human equation was too strong, for what in one man's opinion requires strict adherence to a code of rules is in another man's a just and necessary exception.

Over and over again we hear the complaint, usually uttered by those who will not trouble to think about the meaning, "What's in a Name?" Unfortunately, a great deal more than the mere presentation of a title. Any one can give a bird a name; there is no law against it. Unfortunately, in the past people delighted to give names to any bird that was new to them, perfectly oblivious to or careless of the fact that some one else may have seen and named that particular bird. Unfortunately, too, these names are apt to stick, are copied by those who do not understand anything about nomenclature, and so become accepted synonyms. The name is not given merely in order that we may recognise a bird which occurs in Britain or any other area, but so that the particular species may be known by workers in every part of the world; ornithology is an International Study. The scientific name, be it derived from the Latin or Greek, or from neither, is the name which will be accepted and recognised by workers in any land or of any tongue. Even in England it is necessary, for the local or colloquial name in one district may not be the name used in another. We know the species we call the Goldfinch and the Goldeneye, but in many places the Yellow Bunting is the former, the Tufted Duck

the latter ; and what would either Goldfinch or Goldeneye mean to a German or Frenchman ? Robin we know as a familiar name for the Redbreast, but what is the Robin of America, Australia or India ?

The earlier writers had few ideas of international importance ; they worked on the birds of their district or country, and had little access to literature ; they described a bird by a short title for convenience. Thus arose a great multiplication of names, and when naturalists began to exchange ideas, and specimens, with men from other countries they discovered that many of these birds had been described under different titles in other places. Linnæus instituted the binomial description or descriptive title, giving his first or generic name to the group, his second or specific title to the particular kind or variety that he described. This was a great advance, but then pedantry slipped in, and more than this the lust for fame ; all the workers wished to see their names adopted, and name after name was coined as ornithologists discovered or imagined that they had discovered some bird or other animal that Linnæus had not handled.

And so the confusion became worse confounded, until within recent times thoughtful workers strove to find some method by which uniformity of ideas could be secured. The rules of Nomenclature, included within what is known as the Stricklandian Code, failed to bring agreement, and it was not until the International Congress of Zoologists was instituted that any really useful method was reached. A Commission was appointed, and a new and ordered code formulated, its suggestions supported by men of all nationalities.

The main law, the backbone of the rules, is that the first name given to any species—and as we are dealing at present with birds we will confine our remarks to birds, though the rules apply to all animals—should be the one to be retained ; this is the Law of Priority. Some starting-point had to be stated, for it

was evident that the earliest descriptions were long and unwieldy ; they were descriptions and not names. Thus, treating of English nomenclature, we should have the Titmouse with a Long Tail, which could be shortened into the Long-tailed Titmouse, or, as Linnæus called it, *Parus caudatus.* This conversion of the descriptive title into a systematic name was originated or first perfected by Linnæus, and so it was decided that the "Systema Naturæ" of 1758, the 10th edition, should be the starting-point, that being the edition which was issued with a distinct intention of establishing binomial nomenclature. Pre-Linnæan names, even when reduced to two Latin titles, should not be considered. With this as a beginning—as a fixed date—the new species added later should hold the earliest name given by any author who so described or figured the species that it could be recognised.

For a long time many British and other ornithologists refused to be guided by this important rule, and there are some who still doubt its wisdom, though all must agree that it is a most important step towards securing uniformity. One great objection was that in the 12th and revised edition, 1766, many names were altered, and a large number of British ornithologists contended that as Linnæus was counted the father of the binomial system it was right that his corrections should be used. With this difference of opinion many synonyms came into use, adding greatly to the confusion.

Quite a number of authors objected to the adoption of tautonymy, or the repetition of the same generic and specific name when, according to priority rules, these were the same. For a long time this was called the *Scomber scomber* system, the name of the mackerel being the example chosen. When we were asked to accept tautonymic sub-specific names, and the Hawfinch was designated *Coccothraustes coccothraustes coccothraustes*, the remarks of men of the older school were pathetic or unparliamentary.

Before these rules were formulated, Henry Seebohm, annoyed by the uncertainty of nomenclature, advocated and adopted for his "British Birds" the system of *auctorum plurimorum*, selecting as the standard the name which had been used by the majority of authors of repute. But who, we may ask, is to say which of the numerous writers on birds are to be taken as reliable? The fact that so many simply copied the names from some one else, and that others coined names where and when they wished, was not considered.

One article, that "the original orthography of a name is to be preserved, unless an error of transcription, a *lapsus calami*, or a typographical error is evident," is by no means universally adopted. Here again what is meant by an error depends on personal opinion.

The description with the name attached must have been published, or a recognisable figure have been supplied. This rule should not at first sight present difficulty, but when the diagnoses were examined critically it was discovered that many, even those of Linnæus, were so slight or incorrect that they would apply to two or more species, and even now there is difference of opinion as to which birds were actually before or in the minds of the writers.

A familiar and much-quoted example is the name of the Song-Thrush, which for many years was *Turdus musicus* of Linnæus. When it was pointed out that the bird described by Linnæus was the Redwing and not the Song-Thrush, it was deemed necessary to scrap the old-established name and transfer it to the other bird. Brehm's *philomelos* was the next name and is now used, but in 1923 Messrs. Mathews and Iredale unearthed Turton's *ericetorum*, published twenty-four years before Brehm's, and tell us that we must change again.

Apart from the varied opinions which may be held about the reliability or correctness of the diagnosis as indicating what was the actual species named, is the meaning in the

3 *Pl.* 2. F 72

Spotted Eagle. (pp. 156, 276).

3 *Pl.* 3. **Raven.** (pp. 80, 251). *F* 73.

minds of the majority of thinking ornithologists of the words "that this name was published." What is a publication? Apparently the B.O.U. Committee, the present one, interpret this as being any printed matter, for they have accepted as an authority an anonymous writer in an obscure periodical, and a sale catalogue, in which the names were discovered to have been inserted or invented by Pallas. Vroeg's Catalogue was so rare that only three copies were known to exist, but it was reprinted, and has been the medium for altering several well-established names, and causing great annoyance. When we are called upon to make these pedantic alterations on the authority of unknown writers, or when the names have appeared in lost and forgotten publications, we begin to question whether the discoverers of these names care most about uniformity or their own reputation as bibliophiles. The Committee who drew up the 1915 List held out against many of the most radical changes, but yielded later, and the 1923 List includes the names from Vroeg's Catalogue and other sources equally questionable.

That the sub-species or geographical races are best described by trinomials will appeal to every one who studies this important subject, for geographical distribution cannot be neglected, especially when we consider the migratory habit. Whether the particular race is worthy of segregation and a distinct title is another matter. If it is it should have a distinct title, and the trinomial method is far better than that adopted by certain systematists, mostly in other branches of Zoology, of calling a race a variety. There may be, usually is, great difference between a fixed form or race and a variety, which may be merely a sporadic variation or sport.

After the specific name, or the sub-specific name where there is more than one form recognised, follows the name of the author or authority, usually abreviated. Considering how necessary it is to know who is responsible for that name as

applied to that particular species, seeing that many names have been given to different birds by different workers, it is rather surprising how few writers of popular bird books have any idea of the meaning of brackets. The name of the author may be enclosed in brackets or follow the specific name without them. Many of these writers, sometimes frankly stating that they take no interest in scientific nomenclature, follow some well-known writer or established list or system. This is quite wise if they state whom they follow, and follow correctly. But if they imagine that where the name is without brackets it is a slip of the compositor or publisher, and *correct* by enclosing all the authors' names in brackets, they are merely exposing their own ignorance. When the name follows without brackets it means that that particular name is the actual one, genus and species, used by that authority, but when it is enclosed in brackets it shows that he used a different generic title from the one now adopted. Thus *Garrulus glandarius* (Linn.) shows that Linnæus placed the Jay in a wider group, and we find that he called it *Corvus glandarius*, and if this was now used it would be *Corvus glandarius* Linn. It is usual, nowadays, to put no comma between the specific name and that of the author, the distinction being in the type, for the scientific name is as a rule in italics. Another frequent error is to copy some published list, where perhaps no author's name is given after the specific name, and to add the writer's name as if he was responsible for the original naming of the species. *Garrulus glandarius*, Saunders, is wrong, although this was the name by which Saunders describes the Jay.

In the list at the end of this volume I have given the names as advocated by the B.O.U. Committee of 1923, and have added a brief account of the status of each species, following, in the main, that supplied in Witherby's "Practical Handbook of British Birds," 1920–1924, and his useful "Check-List," 1924. Some of our best ornithologists aided in the production of the

Handbook, and though there are some still open questions, the B.O.U. list and the Check List are now practically the same. Most of the points of difference are in systematic sequence or generic names, which have far less importance than difference on matters relating to specific nomenclature. The reference numbers (such as i. 14, or ii. 230) refer to the pages in my "Birds of the British Isles," Series I. or II., in which the species is mentioned. Before this are particulars of the few new sub-species that have been recognised and included since my previous volumes first appeared.

It will be seen that a number of alterations have been made since the committee published the 1915 list. In some cases the change may be necessary, but in others there seems no justification for creating further confusion, but as I am not an expert nomenclator, and hope I never shall be, I hold no brief for the 1915 nor 1923 committees, nor for the editors of the "Practical Handbook"; they know all the arguments in favour of the changes. I dare not hope that we have reached finality; many birds which are believed, by some at any rate, to have no recognisable geographical forms will be subdivided sooner or later, and doubt will be cast on the validity of some now treated as sub-species. Ornithology is a living, progressive science, and ornithologists keep it very much alive by disagreement. That is why I have decided not to make many alterations in nomenclature in new editions of Series I. and II., but to state how this matter stands to-day, for names may be altered to-morrow. Newton, in the Preface to his monumental "Dictionary of Birds," mentions "Nomenclature, which owing to its contentious nature I have studied to avoid." Three decades have passed since that was written, and the quarrels of ornithologists are not yet settled; will they ever be?

MIGRATORY AND OTHER HABITS.

In the following pages I have considered all the birds on the British List, treating them in Families, stating so far as possible when they visit us, and whence they come, and adding any information which has come to my notice which is supplementary to that supplied in Series I. and II. It must be borne in mind that the study of birds is never final ; we can never say that we have learnt all about them, and the youngest student by close observation may add to, even correct, the apparently finished work of the masters. Miss E. L. Turner (17), when telling of the songs and other calls of birds, very truthfully says, " It takes half a lifetime to learn them, and the other half to correct your mistakes." There is always something new to discover, some new experience to delight the watcher and worker.

Family CORVIDÆ. The Crows.

Many of the British Crows are sedentary or local wanderers, but others are regular winter visitors and passage migrants. The autumnal immigration of the Grey or Hooded Crow is the most noticeable corvine migration, although large numbers of Rooks and Jackdaws, and a few Carrion-Crows, visit us from Europe.

The majority of the Hooded Crows come from Northern Europe, and some probably from Central Europe ; there is nothing to support Gätke's assertion that the birds have Asiatic origin, nor, as Dr. Clarke points out, his theory of a due east-to-west flight of this species, for he argued that the Grey

Crows which passed Heligoland were flying direct to the Lincoln coast. Indeed, it is probable that the volume of the movements on our shores depends largely on the direction and force of the wind. The reports from the Galloper Light-vessel, well off the mouth of the Thames, which were received in the autumn of 1909, showed that during October a large and steady passage had a W.S.W. direction. These birds might have coasted south and actually passed Heligoland, and yet, keeping to mid-Channel, never touched our shores; again, Captain A. W. Boyd observed an extensive southward passage in late October 1917 at Étaples, after a strong gale from the sea. Evidently the birds were hugging the coast and had probably passed east of Britain.

Grey Crows occasionally reach western English counties, but in Cheshire, Lancashire, and Derby they are more frequent on the Pennine hills than elsewhere; we may conclude that they arrive from the east. There is no evidence of regular southward movements of Scottish birds, though they may wander.

Grey Crows, probably from the Isle of Man, occur occasionally in North Wales, but they are exceptional wanderers. Once in Anglesey in May I saw a Hoodie come in from the north; the time of the year and direction of flight precluded any suggestion of migration.

The dates of autumn arrival of the Grey Crow are given by Dr. Clarke as from October 7th to November 9th for winter visitors, and August 3rd to November 2nd for passage migrants, the main movements being in October. Return passage is between March 9th and May 12th. Naturally it is difficult to distinguish between winter visitors and passage migrants, but these dates are based on the direction of flight noted at various places during many years of patient observation. In 1912 a single bird was on the Isle of May on July 5th, and another at Wigtown on the 26th, but surely these suggest no more than erratic wandering. Dr. Clarke's book was

published in 1912, and would not include records for the autumn of that year, yet the first oversea immigrant recorded was a bird killed at the Spurn Light on the night of August 3rd/4th. General immigration was not noted until the end of September.

In 1911 Grey Crows reached the Flannans on September 22nd, and Fair Island on October 3rd. On the East Coast the first was recorded in Norfolk on October 1st, and at Spurn in Yorkshire I saw one on the 6th. This report, by the way, was published by the B.O.C. Committee as for Cheshire! Spring emigration was first noted that year on March 2nd, and immigration lasted until November 24th. The Committee appointed by the British Ornithologists' Club to report on migration point out again and again that many of the records of "Crows" from the lighthouses have no specific value; the light-keepers do not always distinguish between Grey or Carrion Crow, Rook, or even Jackdaw. Thus dates of the arrival of Carrions can be based only on the few occasions when birds have been killed at the lights, and a few reliable September and October observations from Scotland. These Carrions are supposed to come in with Rooks from Central Europe, but on October 6th, 1911, when I saw the first Hooded Crows at Spurn, ten Carrions came in from the sea from the north-east, and a few days later I saw one arrive with a party of Greys.

The Rook and Jackdaw are regular migrants, and emigration of our home-bred birds is suspected, though not to any great extent. The source of origin of the immigrants—winter visitors or passage birds—is supposed to be both Scandinavia and Central Europe; as a rule the movements in autumn are from the end of September to the end of November, and in spring from mid-February to April. In 1911 immigrants were first noted in Suffolk on September 11th, and as the birds were flying north-west they may have come from Central Europe but those which are noted, usually in November, at Fair Island,

the Outer Hebrides and other northern stations have more likely travelled from Scandinavia. Large numbers have been seen arriving from the east or north-east in November on the north-east coast of Norfolk. In Suffolk, in spring, birds have arrived from the south and departed again in a day or two, flying north-east.

Barrington (18) tells how in November, 1884, great numbers of Rooks passed the Tearaght and Skelligs Lights, west of Kerry, coming in from the Atlantic, and concluded that these were birds which had migrated too far west. I suspect that they had been carried too far *round* when travelling from Scandinavia ; at Sule Skerries, Orkney, Rooks, Daws, and Hooded Crows arrived in March in strong south-east winds, and left two days later in a westerly gale.

Although the Raven is sedentary in most parts, seasonal migration of the species in small flocks has been noticed in Scotland and Ireland.

Local wanderings rather than migrations are undertaken by the Magpie and Jay, though the last is an autumn immigrant from time to time to the East and South coasts. When, however, these birds have been examined, which is but seldom, they have been referred to the Continental form. Two subspecies of the Nutcracker rank as occasional visitors to Britain, but the European Thick-billed bird is, curiously, less frequent than the Slender-billed Siberian race.

The Chough, like the Raven, is sedentary, and its appearance far from its usual haunts, as in Lancashire in September, 1908, is due to erratic wandering or to escape from captivity.

Display or other similar performances in which a number of birds take part are not solely vernal or purely nuptial amongst the *Corvidæ*. Ravens roll at any season, though most frequently when sexually excited. In late September I watched a pair in the Isle of Man ; the male rolled repeatedly, alternating this

performance with oblique aerial dives ; Mr. F. S. Graves tells me that one bird, in spring, planed upside-down into the wind at least a dozen times in half a minute, but the best display that I have ever seen was in Cumberland in March. The male rose in spirals to an immense height, calling continuously ; then drifting for a moment, dived headlong. But the descent, again and again, was interrupted by the bird altering its position, and shooting forward horizontally, with one or two quick rolls or reverses ; it must have repeated this action half a dozen times, shooting down between its glides, before the female rose from the crags and joined it. Dr. F. Heatherley found the Raven difficult to photograph, suspicious of a trap (Plate 3), but the Jackdaws and even a Herring-Gull were more confiding (Plate 4) ; Miss Best's picture (Plate 6) illustrates the Carrion's manner of feeding the young.

The steep, corkscrew descent of the Rook is by no means only nuptial. When watching the birds going to roost I found that the manner of reaching the branches was varied ; some dropped with sharp turns and twists, even reversing like the Raven, and checking the drop by a quick upward sweep just before they alighted ; others shot down obliquely with wings half closed, but without turn or twist ; others again floated down gracefully, wings motionless but uplifted, and a few circled round slowly until near the ground, when they beat leisurely up to the tree-tops.

In autumn I have seen Jackdaws flying together round and round the steeple in which they nest in spring ; they followed one leader's actions, swerving, rising, stooping, as if enjoying a game. From a hole, a nesting hole in spring, one bird watched them, occasionally answering their constant shrill cries ; doubtless the birds were playing, but they may have been playing at display. In the Isle of Man in September Colonel H. W. Madoc and I watched a party of Choughs, whose playful actions were accompanied by the soft *choo* of spring rather than by the

F 80.

3 *Pl.* 5.

Scarlet Grosbeak. (pp. 92, 255).

F 81.

normal longer call. One bird, perhaps in mock display, bowed again and again to a rocky outcrop in the field.

The sociable exercises of Magpies may be observed in autumn. In the South of France we saw small parties gathering in the trees, and whilst some birds took those short upward flights, characteristic of the "marriage" gatherings of late winter and spring, the remainder kept up incessant clamour, but we did not see the fights which accompany many nuptial meetings.

As a rule if a pair of Rooks attempt to nest at a short distance from an established colony, their efforts are discouraged by force of beak and claw. But when one pair built about a quarter of a mile from a colony I had under observation, the result was unexpected. This rookery was somewhat overcrowded in one clump of trees, but not only did the birds allow the outpost to remain, but in the next year they followed the example of the pioneer, with the result that instead of one congested rookery, an attenuated line of nests stretched from the original rookery to the distant tree. At another rookery, by no means overcrowded, one pair departed from the usual custom by building on a chimney stack. Survival or revival of an old habit is illustrated by the Ravens, which Mr. W. W. White tells me have recently nested in trees on Dartmoor; he saw young in the nest in 1925. Another recent departure from the normal is that of a pair of Magpies, discovered and photographed by Mr. O. J. Wilkinson in the Isle of Man; they built in the heather, with a rock for background, an open nest not unlike that of the Jay, and instead of erecting a protective cover above it constructed a rampart of sticks in front, entering the nest from above.

In 1923, again in the Isle of Man, Mr. F. S. Graves discovered that a Grey Crow had paired with a Carrion, though the latter bird was almost unknown previously in the island. Similar interbreeding occurred in the two following springs, though in

one instance the male was a Carrion ; Colonel Madoc and Mr. Graves saw the hybrids, one of which was described to me as looking like a giant Jackdaw. Apparently the Grey Crow as well as the Carrion is extending its borders, for Dr. H. J. Moon tells me that in 1925 a pair nested near Ullswater.

All the Crows, probably because of their egg-stealing habits, are treated with suspicion by other birds ; but though they are frequently attacked and mobbed they seem to take delight in annoying. In a long aerial struggle between a Grey Crow and a Merlin the former was certainly the aggressor, though it dodged with shrieks of alarm when the irritated Merlin retaliated. In Surrey I have seen Jackdaws mob Carrion-Crows, and in other places Lapwings, Blackheaded Gulls, and Lesser Terns assaulted the suspected robbers. In Shetland a pair of Grey Crows deliberately annoyed some Curlews, who may have had young but hardly eggs so late ; the Curlews finally drove them from their ground, but they were forced to an area occupied by Arctic Skuas, from which they were speedily hustled. In Cheshire I saw a Rook chased off, dodging and calling as if in alarm, by a single House-Sparrow.

The Rook will eat carrion ; Colonel Madoc saw some birds feeding on the carcase of a lamb, and in Shetland the shepherds told me that the Raven was more of a carrion eater than a destroyer of sick or weakly sheep and lambs ; the Great Black-backed Gull, they assure me, is much more troublesome, attacking cast or weakly sheep. In Delamere Forest, Cheshire, the Rooks did yeoman service during a recent caterpillar plague, ridding the oaks and other trees of the larvæ of the defoliating mottled umber and other moths.

The bill and legs of a dead Chough which I examined were dull lake-red rather than bright red or coral, but they may have been brighter in life ; the inside of the mouth was red. Dr. B. B. Riviere (19) pointed out that in young Jays he found the irides bluish-white and not brown, as stated in Saunders'

" Manual," the " Practical Handbook," and, I regret to say, my own book. In my note-book for 1910 I find that the eyes of a young Jay that I captured were " blue," but I overlooked this note. Miss M. Garnett shows that the adult Jay has a narrow brown ring round the pupil inside the broad ring of bluish- or greyish-white. Mr. R. H. Brown (20) describes the newly hatched Magpie as devoid of down, its skin, the inside of the mouth, and the flanges being flesh-coloured, the two last deepening through pink to purple as the nestling grows. The irides, when the bird is fledged, are pale grey. Mr. J. Walpole-Bond (21) described the early appearance of the Chough, at first naked and pink and with short, horn-coloured bill and fleshy legs ; when the eyes open they are hazel, and later greyish-brown. The bill changes to leaden black with a reddish tip in about three weeks, and is not orange until the bird is about six weeks old, when the legs are red, having passed through a leaden stage.

Families STURNIDÆ and ORIOLIDÆ. Starlings and Orioles.

The paragraph in Series I. which deals with the complicated migrations of the Starling was founded on Dr. Eagle Clarke's British Association report (22), elaborated later in his " Studies " (11). He states that in addition to irregular wandering the bird shows well-defined movements in the British area ; it is a summer immigrant from the south and a winter visitor from Northern and Central Europe, and a passage migrant along our shores ; under certain weather conditions it becomes a winter emigrant. Probably all these movements are correctly described, but Dr. A. L. Thomson (23), after careful examination of the results of ringing, finds little to support belief that our Starlings ever are summer residents. Though Dr. Clarke's experiences and numerous records from

the lighthouses prove that there is regular emigration and immigration, he suggests that these are movements of birds on passage and not of British-reared Starlings.

Some idea of the difficulty of the task of collating these records may be judged from the fact that out of 9498 birds ringed there were no more than 5 per cent. recovered, and if those recovered near the place of ringing are excluded the percentage is ·5. Dr. Thomson's conclusion is that " Many British native Starlings are sedentary, while some are migratory within Great Britain, or from Great Britain to Ireland : except for one record of a short cross-Channel journey, there is no proof from this source that any of these native birds emigrate to countries abroad. British winter immigrants come from Denmark, Southern and Arctic Norway, Sweden, Finland, North Germany, the Baltic States, and Western Russia. Records of Starlings marked abroad also show journeys from Finland to Southern France, from the Baltic States to Northern Germany, from Denmark to Holland and Belgium, from Holland to Belgium and Northern France, from Central Germany to Spain and Portugal, and from Hungary to Italy and Northern Africa." The assumption that these autumnal emigrants and spring immigrants were British is not founded on actual marked examples, but based on the absence of observed immigration on other parts of the coast when the departures were noticed. Dr. Thomson shows that passage has been observed at Heligoland in June and July, but I would suggest another possible explanation, that if these birds are on passage their advent was unnoticed because invisible. Dr. Weigold (16) is convinced that Starlings do not adhere to regular winter quarters. The argument from ringing appears to be sound, and yet, in spite of the fact that only one Starling marked as a nestling in Britain has been found abroad, though others marked in Northern Europe, have been recovered further south, we must not overlook the slender chance of marked birds being

discovered, and, if discovered, reported ; the ignorant French, Spanish, or Italian pot-hunter might gaze in wonder at the ring, but make no effort to find who placed it on the bird's leg. Further investigations may prove that Dr. Clarke's theories are correct.

Migrating Starlings may pass unnoticed, above our range of sight, even when moving in the daytime, for an airman tells me that he has frequently seen them up to but not above an altitude of 3000 feet.

The Rose-coloured Starling breeds in South-Eastern Europe and Western Asia, and many migrate east, but at irregular intervals numbers wander north and west and have occurred throughout Europe. Most of these birds are immature, and probably their appearance so far from usual autumnal and winter haunts is due to irresponsible wandering. It cannot be claimed that the species is an habitual migrant to Britain, though it has occurred many times.

The Red-winged Starling, *Agelaius phœniceus*, and the Baltimore Oriole, *Icterus galbula* (both family *Icteridæ*), have been captured or shot in our Islands many times ; Harting lists thirteen occurrences of the former. Most ornithologists reject them because both are favourite cage-birds, and the occurrence, where the data is trustworthy, is believed to be due to escape from captivity. One Red-winged Starling struck a light in the Bristol Channel, and a Baltimore Oriole was taken in Shetland ; it is possible that either bird might have wandered out of its course—just as the Pastor wanders—and have reached the Shetlands or England by the Iceland-Færoe route. Other less likely visitors have been recorded, but the B.O.U. Committee refuses to grant them a place, although it accepts some other birds on no more satisfactory evidence.

The Golden Oriole is a regular though never numerous summer visitor and has nested in many places ; as it has been seen in spring and autumn in Shetland, Fair Island, and

Orkney, it is also an occasional passage migrant. It usually arrives towards the end of April.

The extraordinary and rapid increase of the Starling must have influence on competitive species. The bird was unknown in the south-west about fifty years ago, according to Mr. H. M. Wallis (24), and thirty years ago was no more than a winter visitor to Cornwall, whilst in the Scilly Islands it was not observed to nest until 1911 or 1913. Probably directly connected with the increase are two habits. The first is the continuance of gregarious habits throughout the breeding season, and the second the dropping of eggs. Both these habits seem to have originated or at any rate become general during the last thirty years or so. I see large flocks of apparently mature Starlings throughout April, May, and June, at a time when the nesting birds are otherwise occupied. Rev. E. U. Savage (25), who calls attention to this changed habit, sent a number of birds to Mr. H. F. Witherby for expert examination ; two were apparently mature, but the others were birds of the previous spring with organs not fully developed ; but, as Mr. Witherby points out, Dr. N. F. Ticehurst has records of two Starlings which were ringed as nestlings which nested in the following year. The conclusion is that there is room for only a limited number of breeding birds, though the overabundance of non-breeders must mean considerable drain on the food supply of the breeders.

Two nests of the Golden Oriole that I examined in Holland were lashed to the boughs above with string and contained paper ; string and paper must have been brought from a distance. The Dutch name, *Wielewaal*, is from the clear musical whistle, but the male when approaching his sitting mate had a harsh cat-like cry. When she left the nest he stood on guard but did not brood. The nestlings had very yellow skin and scanty greenish down.

In the Shetlands I found the Starling, a sedentary insular sub-species, everywhere abundant; indeed, it is one of very few resident *Passeres*. Neither in outward appearance nor habits does it differ from our familiar bird; it was alike common in the cultivated fields, on the moors, the cliffs, and shore; undoubtedly the Starling's adaptability explains its abundance and spread.

Family FRINGILLIDÆ. The Finches and Sparrows.

When in autumn or winter twittering flocks of Finches and Sparrows rise from the root-fields or stubbles, or, with a whirr of wings, fly ahead along the lanes, the Greenfinch, as a rule, predominates, though Chaffinches, Bramblings, and Sparrows are often numerous. The origin of any particular flock, and more so of individual birds, cannot even be guessed, though we do know that some British-bred Greenfinches remain all winter and some emigrate in autumn, and that vast numbers arrive on our shores in October and November, either to winter here or pass further south. The gregarious Greenfinch is erratic; Mr. H. G. Alexander noted a southward movement of Greenfinches and Linnets at Dungeness early in January. I have seen many large flocks of Greenfinches in various parts of England, but I have never seen anything to approach the immense numbers which were moving east in Var early in October.

Whether any of our home-bred Chaffinches emigrate in autumn is unknown, but from early September onwards immigration of winter visitors or passage migrants is very marked, and with these birds come the Bramblings; during winter the two species are usually together, especially where beeches are plentiful. These Bramblings and Chaffinches come from Northern Europe. Although most of these birds strike the

East Coast, there is considerable movement along the western seaboard in autumn. On October 10, 1920, Mr. R. W. Jones saw large numbers of Chaffinches, Bramblings, and Siskins flying well offshore on an easterly wind at Llandudno ; and later in that month, in 1918, Capt. A. W. Boyd saw many small parties of Chaffinches at the same place, evidently arriving by a diagonal route from the Lancashire shore. The complication of migratory movements is perhaps illustrated by the fact that when in October one would have expected Chaffinches to be crossing the Channel towards France, I saw one bird heading from mid-Channel towards the Kentish shore.

No regular migratory movements of the resident House-Sparrow have been noted, though there is " south of the Wash " immigration and passage in autumn. Although I cannot say whence the birds came nor whither they were bound, I am convinced that the huge flocks of House-Sparrows which I saw in early October on the Yorkshire coast were on passage ; the size of the flocks varied from day to day, and a few days later abnormal numbers were noticed in East Anglia. Tree-Sparrows are much more regular migrants, and frequently strike the lights on both East and West coasts.

Little is known about the migratory habits of the Hawfinch, except that it certainly wanders in winter and is taken at the lights. Two large flocks—estimated as containing 150 and 100 birds respectively—seen by Mr. H. Bentham (26) in Surrey in March, about the same time that a similar flock was seen in Kent, suggest immigration in spring.

Beyond the fact that the Goldfinch occurs at the lights, and is seen apparently on migration, nothing certain is known ; no Continental Goldfinch has yet been identified in Britain, but Dr. N. A. Joy (27) learnt that on November 1, 1923, Goldfinches, and many other birds, came aboard H.M.S. *Repulse*, when she was between sixty and seventy miles east of the Yorkshire coast. The wind was easterly and light ; on

3 *Pl. 6.* *G 88.*

Carrion-Crow feeding Young. (pp. 80, 251).

3 *Pl.* 7. Northern Bullfinch. (pp. 92, 254). *G Sq*

October 27th a strong wind was blowing from the south, and when this dropped on the 28th, a big southerly migration was noted. It was at its height on the Lincoln and Norfolk coasts between the 28th and November 2nd.

The Siskin is a regular autumn to spring visitor, though the numbers which winter are exceedingly variable.

Of the other Finches of this first group, the Serin is an occasional wanderer, it is supposed from Southern Europe, though Dr. Hartert thinks that two which were netted in Sussex were more like the form which inhabits Germany and North France. Rather more than a score are recorded from the South and East Coasts, two from Ireland, and one from Scotland. The Citril has been but once recorded, the Snow-Finch on three occasions ; both alpine species must be included as wanderers rather than migrants.

A Greenfinch that I watched displaying hovered a little above the female with a slow circular flight, the wings rapidly shivered but never contracted ; its note began with the normal trill and ended with a sweet repeated *twee*, *twee*, *twee*. On another occasion, immediately after coition, the female, fluttering her wings, filled her bill with regurgitated food, and held it open while the male emptied it by rapid pecks ; her mouth was three times filled by regurgitation and three times emptied by the male before he flew away.

In the South of France Col. H. W. Madoc and I frequently watched the Continental Goldfinch and Serin, as they fed in small parties on the carline thistles and other plants, the former hovering like butterflies over the thistles. When disturbed they took refuge in the tamarisks, the yellow lower backs of the Serins very distinct as they flew. In the mature Serins the pale yellow margins of the flight feathers contrasted with the darker portions of the wings, and these margins, though more buff, were distinct in female and young birds. The birds kept

up a continuous twitter, the hissing notes, commented on by Admiral Lynes, contrasting with the liquid calls of the Goldfinches. On October 3rd many migrant Siskins joined these resident birds, and remained with them for several days.

The disputed question about the nesting of the Brambling in Britain has been solved, for in 1920 a nest was discovered in Sutherland, and recorded by Mrs. T. E. Hodgkin, and, though surely unnecessary, the clutch of eggs was taken (29). Booth's and Major Stirling's record of Scottish nesting are now accepted.

Mr. H. W. Robinson (28) supplies an explanation of the uncertainty about the colour of the iris in the Hawfinch, supporting Mr. R. J. Howard's contention that normally it is chocolate-brown ; it changes under stress of emotion, and in a frightened or dead bird is greyish-white. Miss M. Garnett says that the iris in the Greenfinch is dark brown, not hazel.

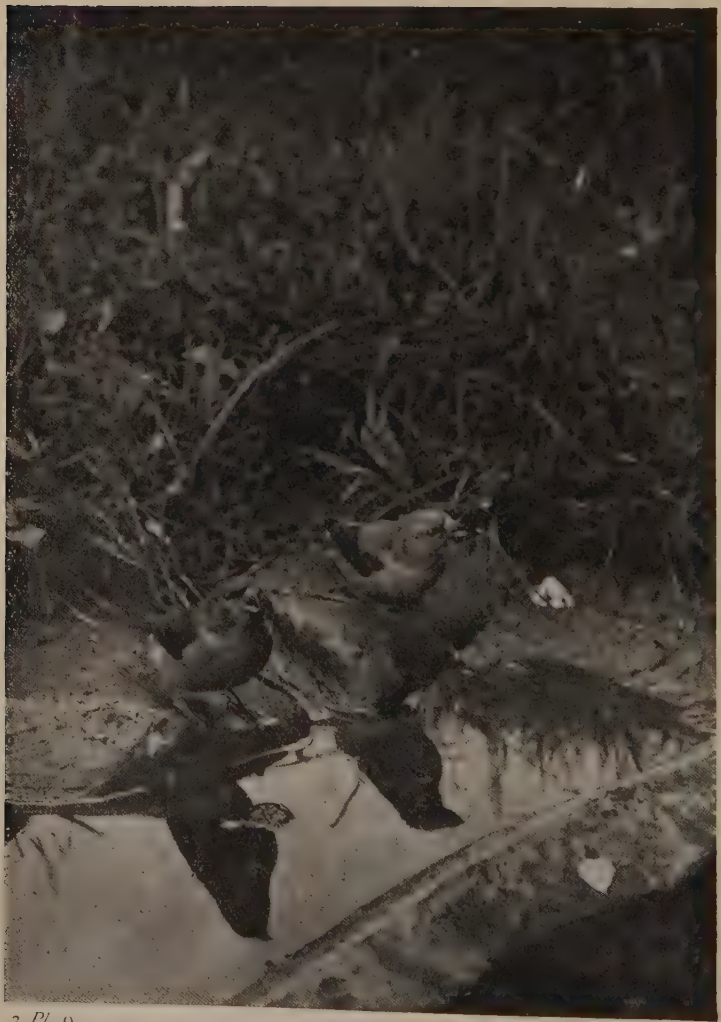
Linnets and Redpolls.

Linnets ringed as nestlings in the British Isles have been recovered in France in autumn on several occasions ; certainly some home-bred birds winter abroad. Winter visitors and passage migrants reach our coasts about the same time as these birds depart. The numbers of Mealy Redpolls (Plate 8) which come to winter are irregular ; sometimes the immigration in October and November from the north-east is very large, and is always more noticeable in Scotland and the Northern Isles than in England. Two Redpolls—the Greenland and Hornemann's—reach Scottish islands occasionally, and a third, the Hoary Redpoll, may like them come via Iceland from Greenland or Arctic America or from Arctic Europe ; these birds are irregular or occasional migrants to the British Isles. It is interesting to note that the four most recent occurrences of the last-named Redpoll have been at Fair Island.

We are still ignorant of the cross-sea movements of the Lesser

3 *Pl.* 8. *G* 90.

Mealy Redpoll. (pp. 90, 254).



3 *Pl.* 9. Crossbills drinking. (pp. 92, 255). *C* 91.

Redpoll, though we know that it wanders in flocks in winter and early spring, some being still gregarious after the nesting birds have begun domestic duties. Passage migration or winter visitation has been observed on the East Coast in September and October, and these or our nesting birds have been seen departing from the South Coast in autumn. The same may be said of the Twite, but as this bird habitually leaves some of its moorland haunts to seek food along the shore, the presence of birds on the coast is no certain evidence of oversea migration.

J. H. Gurney, an experienced observer, believed that birds elected to migrate against the wind. He instances a steady N.N.W. migration of Linnets at Cromer when the wind was westerly. If, however, these birds had come from the north, which is more likely than from the east, the west winds may have drifted them beyond their desired destination, and when they sighted the Norfolk coast they may have turned north to reach the Wash or Lincoln shore on their way to inland winter quarters.

Two interesting incidents relating to the nesting economy of the Lesser Redpoll are related by Messrs. G. C. S. Ingram and H. M. Salmon (30). The one refers to the occasional presence of a second female at an occupied nest, where in one case the unmated female fed the brooding bird when the male was perched near; Mr. W. J. Ashford (31) adds notes of similar experience elsewhere. The other describes the removal of the nesting material from one site to another, and the Rev. F. L. Blathwayt (32) adds an account of similar experience with this species. I have not met with this abnormal habit of the Lesser Redpoll, but in 1922 witnessed the removal and reconstruction of the nest of a Chaffinch, and so far as was possible to see there was no special advantage in the new site, where the young were safely reared.

The white margins of the inner primaries of the Twite, noticeable in flight, give the effect of a longitudinal line on the closed wing; this, though greyer in immature birds, when the bill is less yellow, is a good character for identification.

Bullfinches, Grosbeaks, and Crossbills.

There is no evidence that the British Bullfinch migrates abroad, but the larger Northern Bullfinch (Plate 7) is a more regular autumn and winter visitor, especially to the Scottish Islands, than was imagined before constant watch was instituted. The Scarlet Grosbeak (Plate 5), another visitor from Northern Europe, has frequently been observed in the Northern Islands; but many of the records of the Pine-Grosbeak (Plate 121) are less satisfactory, especially as the more recent occurrences have been in England. It certainly is not so regular a visitor to the carefully watched northern stations.

Many, at any rate, of the Common Crossbills which from time to time reach us as immigrants, make no attempt to return, but remain as colonists, and there is little evidence of migration of the Scottish form. The Parrot-Crossbill and Two-barred Crossbill (Plate 121), which have been observed occasionally, may have come in company with their congeners or have been, like them, nomadic wanderers.

Whether the American form of the last-named has ever reached us by the Iceland-Fœroe passage is not proved, though its occurrence has been reported; as it is known as a visitor to Greenland, there is no reason to doubt its ability to reach us, but the two forms are very much alike.

Mr. J. K. Stanford says that the young Common Crossbill may be recognised in the field by its pale, almost white rump. M. Burdet's Crossbills are wild birds, photographed when they came to drink (Plate 9).

The Buntings.

Most Buntings wander in winter, usually in flocks, and many of our resident Corn- and Reed-Buntings leave us in autumn and return early in spring. With these two, autumn immigration and passage migration are also regular, but though there is some immigration, Yellow Buntings seem to come for the winter rather than on passage. The Cirl-Bunting is not known as an oversea migrant, though in winter it is occasionally met with in areas in which it does not nest. The Snow-Bunting, though it nests in Scotland, is better known as a winter visitor and passage bird, coming to us from Northern Europe, and some wintering so far south as Africa.

Evidently the Ortolan is more regular on passage than has been imagined, for it occurs on the West as well as the East Coast. Dr. N. F. Ticehurst (33), who called attention to its occurrence on Bardsey Island in September, 1913, when at least four passed and one was killed at the lighthouse, says that "its silvery note, uttered on the wing, was always very distinctive." I have only seen the male in autumn, when the plumage was dull, but it still showed the yellow throat, the greyish head, and chestnut below the breast.

The Lapland Bunting is irregular but not infrequent as a passage bird; as it is not a migrant to Southern Europe or Africa, but rather to Central Europe, it seems likely that it is only when the winds are easterly that it reaches our eastern or southern shores. Mrs. T. E. Hodgkin (34) saw about thirty on the Northumberland coast in April, 1920, two days after Mr. S. Gordon had noticed one near the same spot "during a strong easterly wind." Again in 1922, when in September and early October the prevailing wind was S.W., the bird was not noticed in Norfolk, but when the wind was strong from the E. and N.E. Mr. Clifford Borrer (35) shot three out of

numbers which were present. Mrs. Brindley photographed the bird (Plate 10) and nest in Siberia, where, she says, its "*chivet-chivet* note could be heard all night long."

The Rustic and Little Buntings are not infrequent visitors from Northern Europe on both passages, being recorded from various places between the Sussex coast and Fair Island. Three other Siberian or Northern Russian wanderers have been recorded, the Pine-Bunting once at Fair Island, the East Siberian Rock-Bunting at Flamborough, and the Yellow-breasted Bunting on at least three occasions in Norfolk. Col. Madoc and I saw what we believe was a small party of the last species in October in South France, where the bird is known only as a casual visitor; they were seen only on one day. The males had brown heads and the black on the face was dappled with brown, but the chins were distinctly black; the under parts were yellow, but what struck us most was the double white wing-bar.

The Black-headed Bunting (Plate 11) is a native of South-Eastern Europe which has wandered west and north, and been recorded a few times. It has been noted most frequently in Sussex, three times in spring, and twice met with in Fair Island. Were the April and May birds on return migration, or had they wandered far from their normal breeding area? Gätke recorded it from Heligoland, and many years later, in May, 1923, one was killed there "on the first warm day with S. by E.S.E. wind" (16).

The European Rock-Bunting has reached southern England at least four times, and both the Eastern and Western forms of the Large-billed Reed-Bunting are recorded.

Family ALAUDIDÆ. Larks.

The migratory movements of the Skylark carefully worked out by the British Association Committee, and in particular by

3 IV. 10.

G 94

Lapland Bunting. (pp. 93, 256).

3 *Pl.* 11.

Black-headed Bunting. (pp. 94, 256).

G 95.

Dr. Eagle Clarke, are exceedingly complicated, for in addition to emigration and immigration of many British-bred birds, and movements of others within our islands, there are migrations of two streams of birds from and to the Continent, from Northern and Central Europe, some as winter visitors, others on passage. In autumn a wide stream crosses the Channel and North Sea, striking our coasts from Kent to the Humber, and this is met by departing residents or passage birds from farther north on their way to the Continent. Dr. Clarke believes that these east-to-west birds are from Central Europe, and that most of them pass on, our winter visitors being from Northern Europe. These theories are founded on an immense accumulation of data from the lights, and on the personal observations of Dr. Clarke and others, but it should be noted that ringing has not supplied confirmatory evidence of the emigration of British-bred birds, and it may be that most of those which leave our shores are passage migrants. Southward coasting of Skylarks is very noticeable on the West as well as the East Coast, and it is practically impossible to say whence these birds come. The argument that the immigrants from Central Europe, which are seen travelling north or north-west in autumn, are seeking winter quarters north of their breeding range, may be incorrect, for the birds may have come from more northern haunts, and after coasting south along the Dutch and Belgian shores have crossed when they sighted land, and then taken a northerly route before going inland.

As an example of how these movements are further complicated, when crossing from Boulogne to Dover in October I saw a number of Larks in mid-channel, flying S.W., heading in the direction of Havre rather than Kent. Who can say whether these birds had come south past East Anglia and Kent, or had followed the eastern shores of the North Sea? Had they come from Northern or Central Europe? And may not birds change direction, according to conditions or caprice?

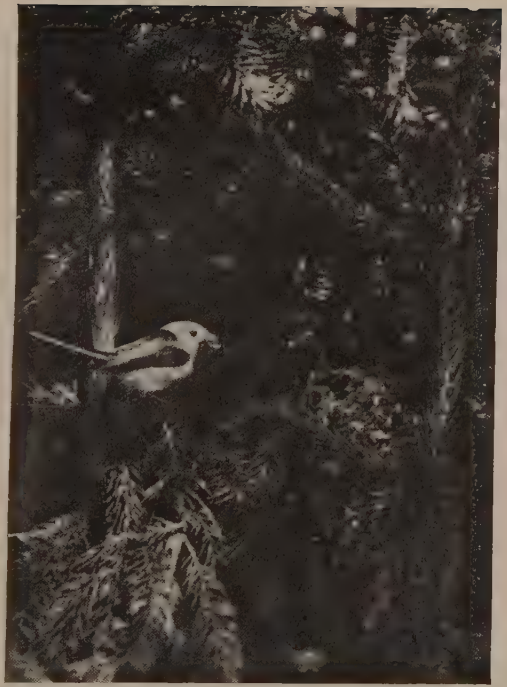
An instance showing how easily a bird may get lost came under my notice. We were crossing from Liverpool to the Isle of Man on a foggy September day, and a single Lark, heading, as autumnal migrants do, from the Lancashire shore to Wales, crossed our track, changed its course and followed. For a long time it flew round the boat, often taking an excursion into the fog as if seeking land, but always returning, evidently afraid to lose sight of its one possible haven. At last, weary, it dropped on to one of the boats, where it remained until we were close inshore, when it left, some seventy miles north of its probably desired destination.

The Eastern Skylark, a form which nests in Western Asia, as far north as Siberia, has three times been recognised at Hebridean and Irish Lights. Surely these birds were too far west; but it is possible that large numbers of Larks from this area may normally take a round British Isles passage on their way to Africa. Most of the Larks killed at the lights are not critically examined, and those which are killed are a mere insignificant fraction of the hordes which pass.

Scandinavian Wood-Larks are occasionally noted as winter visitors or perhaps passage migrants on the Northern Scottish Islands, but elsewhere there is little evidence of more than inland movements.

The Shore-Lark is a winter visitor and passage migrant from the north; whether it goes much farther south than Britain is uncertain. The remaining five species on the British list are very rare. From Siberia or Russia some dozen White-winged Larks and a few Black Larks have wandered to Kent or Sussex, and the Calandra Lark, twice recorded, and Short-toed Lark (Plate 14), noted on under a score of occasions, are wanderers from Southern Europe; the second has been recorded as far north as the Hebrides, Orkney, and Fair Island.

Contrasted with these long-distance travellers is the Crested Lark (Plate 12), which nests in France within sight of our



3 *Pl.* 13. Northern Long-tailed Titmouse. (pp. 109, 261). British Long-tailed Titmouse. *G* 97.

shores, and yet has been recognised in England less than half a dozen times. It is, however, so sedentary in its habits that its appearance is purely accidental.

The singing of the Wood-Lark has been much discussed, but it seems certain that it must be counted as an occasional nocturnal songster, and it also sings in autumn and winter. I listened to it on the low hills in the south of France in September as it circled and looped just as it does in spring. In Surrey I have watched it singing from the ground, from a perch, and in the air. Some have affirmed that the bird is decreasing; this is not surprising in those places where it is harried, for in 1924 I heard of one collector who boasted that he had taken fourteen clutches in a few days! Nevertheless the Wood-Lark is extending its borders, and now occurs in places, especially in the west, where it was formerly rare or unknown.

The Rev. F. L. Blathwayt (36) states that the inside of the mouth of the nestling is orange-yellow and the flanges yellowish-white. The white eye-stripe is even more pronounced on birds in their first plumage than in mature Wood-Larks; on young which were flying with the old birds the streaks met on the nape in a conspicuous patch. This eye-stripe is pronounced in Skylarks of the same age; they also look very hoary.

Crested Larks look heavy, cobby birds, the short tail no doubt helping this impression; we saw them feeding on the roads, investigating mule droppings. Mr. E. A. Wallis (37) says that the short monotonous song, which I have not heard, is often uttered from a heap of stones, but sometimes on the wing. We met with the bird in the Camargue and in waste places in South France, but the Short-toed Lark was more abundant in the pastures bordering the vineyards and on the stony hill slopes, where it was singing in autumn. The flight call of the Short-toed Lark, which was uttered when the bird rose, I put down as *pu-too-oo*.

Family MOTACILLIDÆ. The Wagtails.

Although some Pied Wagtails remain near nesting sites all winter the majority move south; many spend the colder months in southern shires, but large numbers emigrate in autumn to France, Spain, and Portugal. The recovery in these countries of birds ringed as nestlings in England is proof. Early in spring the travellers return; indeed, many are back before the end of February. Even so far north as Lancashire and Cheshire a marked increase of Pieds is noticeable in this month; I have seen parties of birds moving north through Cheshire as early as February 4th, and Mr. F. W. Holder has seen them in Lancashire a few days later, but of course we could not say if these particular birds had ever left England. Passage continues throughout March and usually into April, and the later birds may travel in company with their near relative, the White Wagtail. The White Wagtail rarely nests here; it is a passage migrant, more frequent on the west than on the East Coast, often travelling by an inland route, at any rate through Cheshire, Lancashire, and Cumberland. Mr. C. K. Parker called my attention to a decided southward movement in autumn in the Eden Valley; Pieds and Whites travelled together, but the latter were the more abundant. The destination of the north-bound birds is uncertain; many breed in Iceland and the Færoes, and some may reach Greenland, but others no doubt turn east for Scandinavia; in the Shetlands the White was the only Wagtail I saw; it nests there annually. Col. H. W. Madoc found it nesting in the Isle of Man.

Although some Wagtails travel at night, many move by day, and sometimes seem to migrate in pairs or very small parties. I was interested by the White and Grey Wagtails in the Riviera; we constantly saw single birds, or twos or threes, steadily travel-

ling east, bounding along high overhead, calling as they flew. We seldom saw them stop to feed. Their flight notes called our attention and enabled us to decide with a degree of certainty upon the species.

How far our Grey Wagtails are oversea migrants is uncertain, but though many migrate from their upland haunts no farther than the neighbouring lowlands, others move south. Along the Lancashire shore Mr. Holder sees a steady northward trek in May.

The Yellow and Blue-headed Wagtails are summer residents, and as both have occurred at lights in Ireland, and on Fair Island, Shetland, and other northern islands, it is evident that they are also passage migrants, though whither they are bound is not clear, seeing that the Yellow Wagtail's breeding range does not extend north of Holland. Blue-headed Wagtails nest in Southern Scandinavia, and both species winter in West Africa.

Sykes's Wagtail, a West Siberian form, has occurred at Fair Island and in Sussex in spring, but the Grey-headed Wagtail, another northern breeder, is more frequent, having occurred several times on both passages on the South and East Coasts and in the Northern Isles. Indeed, we may count it as a passage migrant which at times makes use of the route along our shores.

The Ashy-headed Wagtail, a southern European bird which winters in Africa, has been recorded once, and the Black-headed Wagtail, whose home is further east in the Mediterranean basin, at least four times, whilst the Masked Wagtail from Asia has once been discovered in Sussex.

Mr. D. G. Garnett (38), when cruising in the Channel in September, 1917, was surprised, on the 17th, to see first four and then three Wagtails—he could not tell the species—heading north, when they were respectively fifteen and five miles south of the Start. His observations in the Atlantic well off our south-west shores, led him to conclude

that many birds travel in autumn direct from Ireland to the Spanish coast, but he could not understand birds going north at this season. He states, however, that the wind was W.S.W. at the time, and it seems clear that if the birds had left Ireland and met with this contrary wind they might well alter their direction and seek the refuge to the north-west, flying before and on the wind.

According to Dr. Eagle Clarke the Yellow Wagtail usually reaches the South Coast about March 22nd, and he gives as an early date March 10th, 1878, adding that birds arrive in numbers between April 8th and May 11th. Scotland is not reached until about April 15th. Although I have one or two Cheshire records of arrival in the first week of April, it is as a rule not until the middle of the month that the bird is generally noticed. Dr. Clarke's normal date for the Blue-headed Wagtail is April 25th, about the time that the Yellows are coming in in force. March 20th, he considers, is the average date for first White Wagtails, and arrivals continue until the middle of May. Return passage is from the first week in August until the third week of November. White Wagtails usually pass through Lancashire and Cheshire from the middle of April onwards; Mr. F. W. Holder notes them on the Lancashire coast passing from about April 26th. Mr. R. W. Jones has seen the bird at Llandudno on March 24th, for the coastal travellers pass more rapidly than those which journey inland, but Mr. C. K. Parker saw it in South Lancashire as early as April 9th.

That passage birds travelling coastwise do not lose much time is further suggested by the occurrence of White and Blue-headed Wagtails at Llandudno on April 25th. Mr. Jones saw others, freshly arrived, two days later, near where I had seen similar birds a few years before in mid-May. In that case a little party of Whites, Yellows, and one Blue-headed arrived together.

The courtship overtures of the male Pied Wagtail are interesting, even amusing. One male that I watched in February danced towards and round the female with neck stiffly erect and bill wide open ; he did not run, but bounced lightly towards her, and she, for the time at any rate inappreciative, kept him at a distance with her open threatening bill.

All Wagtails bound in flight, and when watching passing Greys and Blue-headeds I noticed that the bounds of the latter were shorter, more jerky, and less graceful than those of the larger bird.

The Pipits.

The Meadow- and Rock-Pipits are partial migrants, for some remain all winter. The Meadow-Pipit is distinctly migratory, for not only do most of our birds move south in autumn or west towards Ireland, but there is considerable emigration from the southern coasts, as well as immigration of winter visitors, and passage along both coasts and in northern islands. Birds ringed as nestlings in England have been recovered in France and Portugal on several occasions. From the end of February onwards arrivals are noted in Ireland and on the South Coast, and these birds, whether seeking British breeding-grounds or going further north, are noticeable in all parts in little migratory flocks.

Dr. Eagle Clarke's dates for passage are between March 20th and May 22nd in spring, and August 29th to November 18th in autumn, whilst he gives September 11th to October 8th for immigration of winter visitors. These dates, however, must be taken as averages rather than extremes, for the reports of the B.O.C. Committee, especially the later ones, extend these periods. In 1913, for instance, Meadow-Pipits struck the lights or were seen coming off the sea in the Channel Islands, Hampshire, and Suffolk between March 9th and 20th, and a large increase was noticed in the Eden Valley, Cumber-

land, on March 24th. Of course, these may have been returning British nesters. Many pass through the country in clean, bright plumage whilst wintering birds are still apparently in moult. In 1914 these birds were in Cheshire on March 1st, and in 1915 I saw a score or so on the 2nd; indeed, in five other springs I have notes either of my own observations or of Mr. F. W. Holder's on the Lancashire coast of passage between March 14th and 18th, though as a rule the arrivals are later. At Holy Island, Northumberland, Meadow-Pipits in large numbers arrived and departed about the middle of April.

In the B.O.C. report for 1911 it is stated that migration began in Yorkshire on August 13th, and birds arrived in the Hebrides and Shetlands on the 14th and 19th, whilst large immigration and passage movements were noted in Suffolk on the 22nd and 25th. Even in December small numbers of Meadow-Pipits were seen on the Sussex coast passing south all day on the 8th, and in Somerset some were leaving on the 28th. In 1912 birds were at the Sussex lights on August 9th and 19th, and departures were recorded from Hampshire on December 4th, and odd birds were seen at Fair Island on the 5th and 9th.

The Meadow-Pipit migrates both by night and day. On October 8th Mr. Holder saw a steady stream of birds pass along the Lancashire shore for two hours, and on September 22nd I witnessed an inland passage of Pipits, crossing the bare ridge of Cader Idris, all flying west. Doubtless the sea cools the migratory ardour of many Meadow-Pipits, for I have seen great numbers wintering in February on the Devon coast, but some will venture a sea-crossing of between 500 and 600 miles, for Mr. D. G. Garnett (38), tells that when 240 miles south-west of Plymouth on September 21st, 1917, a Meadow-Pipit came on board and another approached but passed the vessel. These birds, he feels sure, from the direction of flight, were migrating from Ireland to Spain.

Dr. N. F. Ticehurst (33), when on Bardsey Island in

3 P. 14.

Short-toed Lark. (pp. 96, 257).

II 102

3 *Pl.* 15. *H* 103.

Central European Crested Titmouse. (pp 109, 260).

September, 1913, found that Meadow-Pipits came in from the west rather than the north when travelling by day. They appeared to reach the island either from the north-west or south-west, but changed their direction slightly when they sighted the Carnarvon coast, and travelled east or a little north of east. This he called the "Pipit Route," which was shared by Swallows, but the main Wagtail route was north to south, the birds heading right across Cardigan Bay.

As there are four forms of Rock- and Water-Pipit, now treated as sub-species of *Anthus spinoletta*, which in autumn and winter are very similar in plumage, knowledge of the migration of these birds is obscure. The British Rock-Pipit certainly appears to wander south in winter, appearing in localities very different from its summer haunts. It is not uncommon along the tide-line on low shores, or in the muddy sluices in such places as Dungeness, where I have seen either it or the Scandinavian bird; Mr. H. G. Alexander (39) met with it on a Cambridge sewage farm in October. Some of our birds may emigrate, for the Rock-Pipit, probably our form, is an autumn and spring migrant on the East Coast, and has been killed at lights off the South Coast many times. The Scandinavian Rock-Pipit has been reported from various places, including Fair Island and the Pentland Skerries, since it was first satisfactorily identified as a spring visitor to Sussex. The Water-Pipit (Plate 16) is now regarded as a regular bird of passage, at any rate on the South Coast, and reports from many other places, including some in the west—the Scilly Islands and Carnarvon—and others inland, are believed to be reliable. The American Water-Pipit, which has twice occurred at Heligoland, was taken by Dr. Clarke on St. Kilda in September, 1910.

Ringing proves that the occurrence of the Scandinavian Rock-Pipit on our shores is not surprising, for a young bird ringed in the Aland Isles in July was shot a month later near Dieppe.

The Tree-Pipit, a summer resident and passage migrant, arrives on the South Coast, as a rule, early in April, and begins to move south early in August. Passage movements are most noticeable in May, and September and October, not merely on the East and South Coasts, and at light-vessels well offshore, but at Fair Island, where it is regular on both passages; Dr. Clarke met with it in some numbers on St. Kilda in the autumn of 1910. Early emigrants have been recorded at the Channel Islands on August 22nd, and the latest date given for departure by Dr. Clarke is November 9th. British-ringed birds have been killed in Portugal.

Richard's Pipit (Plate 16), a northern bird, has occurred so frequently that it must be classed as a passage migrant, though everywhere irregular and never common. Its visits have been mostly in autumn or winter. The Tawny Pipit (Plate 21), a European bird with a range from Sweden to the Mediterranean, has reached us less frequently, and has not, like the last bird, been met with far north in our Islands. The Red-throated Pipit (Plate 19), from North Europe or Asia, is an even rarer visitor on passage migration in spring and autumn; like Richard's Pipit, it has been recorded from various places, even so far apart as Sussex and Kent, Achill Island, Unst and Fair Island, and St. Kilda.

Pipits, especially in autumn, are very difficult to identify unless the observer has an exceptionally good ear. Mr. H. G. Alexander (39), who is so gifted, believes that the Water-Pipit is commoner than is supposed, and describes the birds as "shrill-voiced Pipits, of the general colour of the Rock-Pipit, but showing some white on the sides of the tail." Mr. A. Smith (40) adds that the eye-stripe shows up the greyish-brown of the ear-coverts, and that the bird in spring is much greyer than the Rock-Pipit. I must confess that, not having a good ear, I have seen many Pipits of Rock-Pipit size which have puzzled me.

The length of leg and upright pose, as well as the size, were what called my attention to a Richard's Pipit that I saw in Surrey in May, a time of year when I least expected to meet with it. Its unstreaked back, boldly streaked breast below an almost white chin, broad eye-stripe, buff against the darker ear-coverts, and its legs almost orange in the sunlight, were points that I specially noticed. It was not, apparently, popular with its temporary neighbours, for the Meadow-Pipits, noticeably smaller, and the Skylarks which appeared to be about the same size, chased it whenever it came near them. I did not notice the "loud sparrow-like chirp" which called Mr. R. W. Jones's attention to one he watched on the Great Orme, North Wales, in December, 1921.

The difference between two Tawny Pipits which Col. Madoc and I watched in autumn in the South of France was very remarkable. One bird was almost fawn, and so uniform in colour that its eye-streak was by no means a conspicuous feature, and the moustachial streaks and spots on the breast were obscure; the other bird was darker, had streaks on the head, and a noticeable moustachial line on either side of the chin, whilst a dark line through the eye emphasised the pale buff or creamy yellow of the superciliary streak and the ear-coverts below. The pattern on the closed wing, due to the edgings of the flight feathers, was also more emphatic. These birds arrived on some dry rough pastures on October 7th, on the same day that we first noticed passing Tree-Pipits, and the day after we had seen the first arrival of any Pipits, a party of incoming Meadows. These birds, no doubt, had travelled south by the Rhone Valley.

Family CERTHIIDÆ. The Creepers.

The British Tree-Creeper is a nomadic wanderer in winter, but not an oversea migrant; the Northern European bird is more migratory and has twice been recorded from Fair

Island; others in the Orkneys and Shetlands have not been critically examined. I saw this bird in Norway years ago, when unaware of sub-specific distinction, and in Holland, where it looked darker; but when I saw the Southern European *Certhia brachydactyla*, though unable to notice difference in bill and hind claw, I was at once struck by its darker, more boldly streaked upper parts in strong contrast with the white underparts.

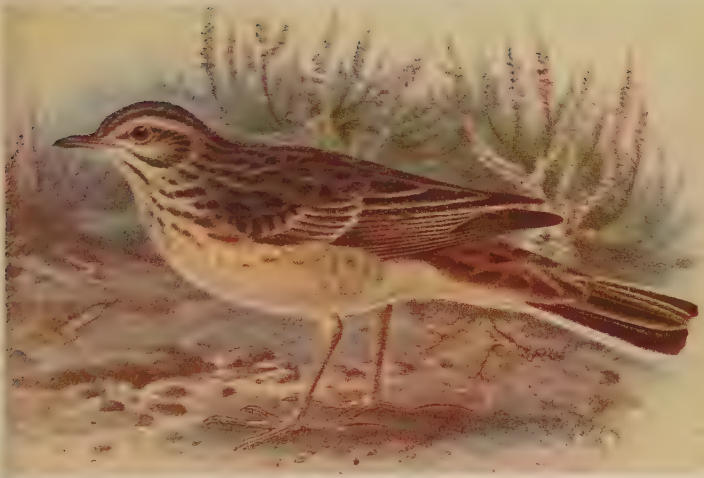
The occurrences in England of the alpine Wall-Creeper (Plate 22), a wanderer rather than a migrant, have risen from five to eight; birds have been seen by reliable observers in Somerset and Dorset, and a fifth recorded for Sussex.

Attention has been directed (42) to a roosting habit of the Tree-Creeper. It scratches small hollows in the bark of Wellingtonias and sleeps in these with the back level with the bark and the bill pointing upwards. The observations were made in Cumberland, Ireland, Cambridge, Sussex, Cheshire and North Wales, and Mr. N. H. Foster (41) photographed the bird asleep. I have seen a Creeper asleep on the trunk of a tree, its bill tip resting on the bark, but have not noticed it in a crack or hollow.

Family SITTIDÆ. Nuthatch.

The British Nuthatch occasionally wanders in winter; I have met with it in places where it is not known to nest, but it is hardly a migrant. Nuthatches which I saw in Provence and Holland, presumably *S. europæa cæsia*, had dark underparts, and the flanks of the former were nearer to claret than buff.

Mr. E. Worthington brought to my notice the case of a Nuthatch plastering up the lid of a nesting-box so that it was impossible to open it without disturbing the bird, and Mr. G. H. Gurney (43) says that this is not unusual, and that if the lid is forced the bird does not always desert. Mr. A. H. M.



Richard's Pipit. (pp. 104, 259).

Water or Alpine Pipit. (pp. 103, 259).

3 *Pl.* 17.

Pied Flycatcher—female. (pp. 111, 262).

H 107.

Cox (44) counted the material used by the birds in one of his nesting-boxes ; allowing for disintegration of the strips of bark (he counted 13,300 bits), he estimated that at least 10,000 bits of bark, 400 wood chips, and 100 ilex leaves had been used, mostly brought one piece at a time. The whole nest weighed thirty-one ounces.

Family REGULIDÆ. The Goldcrests and Firecrest.

The British and Continental Goldcrests are so much alike, and so few of those that have occurred as migrants have been critically examined, that it is difficult to say whether our subspecies migrates at all. But we do know that Goldcrests, sometimes in great numbers, come from Scandinavia or elsewhere in autumn, either as winter visitors or on passage, and that the nomadic winter wanderings of our bird are as a rule southward. Goldcrests occur at the lights on the South and West coast as well as on the East ; and in reports that I have had from the Point of Ayre, Isle of Man, very large movements have been noted at the end of April. In many of the so-called British and Continental Goldcrests that I have examined I can see no distinction which may not be due to individual variation, but perhaps I lack a fine colour-sense. Is it not possible that after the destruction—it was more than decimation—of so many Goldcrests in the winter of 1916–17, our stock was re-established by Continental immigrants ?

The Firecrest, a winter visitor or passage migrant from Central or perhaps Southern Europe, seldom occurs in the northern English counties. The bird is by no means shy, but it is small and active, and difficult to see when feeding in the dark foliage of conifers, but when viewed at close quarters the face markings are so distinct that there is no excuse for the frequent confusion between it and the Goldcrest. In the Riviera it was the distinctive note which again and again enabled us to localise the bird.

Family PANURIDÆ. The Bearded Tit.

The Bearded Tit is sedentary, but has been known to wander occasionally, and this may explain its recorded appearance in Hampshire in February. A few pairs may have survived in certain localities which are believed to have been long deserted; at any rate, I have good evidence of the occurrence of a pair in Sussex during the whole of two consecutive summers, though no nest was discovered, and a less satisfactory record of a pair in June in Buckinghamshire.

Family PARIDÆ. The Titmice.

All of our British Titmice are distinct from the Continental forms, and though they wander in flocks in winter this fact suggests the result of isolation and absence of oversea migration. There are, however, many records of the identification of the Continental Great Tit as a winter visitor, and other occasions when the bird has appeared in considerable numbers, though no examples have been examined. Similar but much less extensive immigrations of the Blue and Coal-Tits have been observed, but a few only of the birds have been examined and pronounced to be the Continental forms. Further, there are single records of the Northern and Central European Crested Tits, and the Northern Willow-Tit, and one satisfactory record of the occurrence of the Northern or White-headed Long-tailed Tit, though others have been reported. These all point to casual wandering rather than to intentional migration.

Mr. A. Astley calls attention (45) to the habit of the Coal-Tit of concealing food, the other Tits eating it at or close to the spot where they obtain it. I have watched Coal-Tits carrying food away when other Tits remained, but did not imagine that they wished to hide it or make a store.

One display of the Coal-Tit consists of short aerial bounds, almost as if the bird was fly-catching, and a floating return with quivering wings. I have seen the Great Tit perform in the same way, but with less elegance.

In the Riviera the Central European Crested Tit occurred on the lower slopes of the hills in cork woods, and also amongst the Maritime pines close to sea-level. The tinged or clouded faces of these birds struck me as noticeable when compared with my memory of Scandinavian Crested Tits.

My attention was called to an unusual roosting habit of the Blue Tit. The streets of a small Cheshire town are lighted by electricity, and in winter a number of Blue Tits nightly roosted under the metal shade above the lighted bulb.

Macgillivray records 2,379 feathers used in lining the nest of a Long-tailed Tit, and a number of observers give their experience (46), the largest number being 2,457. One correspondent had six nests under observation, and he measured the distances from the nearest farm; the largest number, 2,024 were carried 120 yards, the smallest, 835, for a distance of 650 yards. On these details, assuming that one feather only is carried at a time, another writer works out that a single pair would travel between 600 and 700 miles to fill the nest; unfortunately a later observer found Tits bringing in bundles of feathers, so the calculation is unreliable. Plate 13 shows the difference between our bird and the Continental Long-tailed Tit; the Crested Tit (Plate 15) is the Central European bird.

Family LANIIDÆ. The Shrikes.

The Red-backed Shrike, a summer resident, reaches the South Coast, as a rule, after the middle of April, and often not until the end of the month; it is seldom in its nesting haunts before the beginning of May. Emigration, in August and September, is to winter quarters in Africa, even far south.

As a nesting species it is rare in northern counties and Scotland, yet at Fair Island it is observed almost every year on both passages, and it is an occasional passage migrant at other Scottish stations.

The Great Grey Shrike is a winter visitor, and some may pass to Central Europe from their summer haunts in Northern Europe, but it does not winter far south. Rarely, it has been met with in late spring and summer—in July in Staffordshire, for instance. The Southern European bird has been once recorded, but the Lesser Grey Shrike, also a South European bird, but with a wide range which extends to Asia, has been several times noted, once even at Fair Island in June. This remote island has also been visited at least twice by another Mediterranean species, the Woodchat, whose not infrequent visits in spring and summer are distinctly puzzling. Most of these occurrences have been in May or June and in southern counties, but the bird has been recorded four times from Scotland, once from South Wales, and twice from Ireland. Surely these vernal movements suggest an attempt to extend range rather than regular migration; at present we can look upon it only as an erratic wanderer. Even more surprising are the single visits of the Corsican Woodchat, and the Masked Shrike, which has a Western Asiatic range.

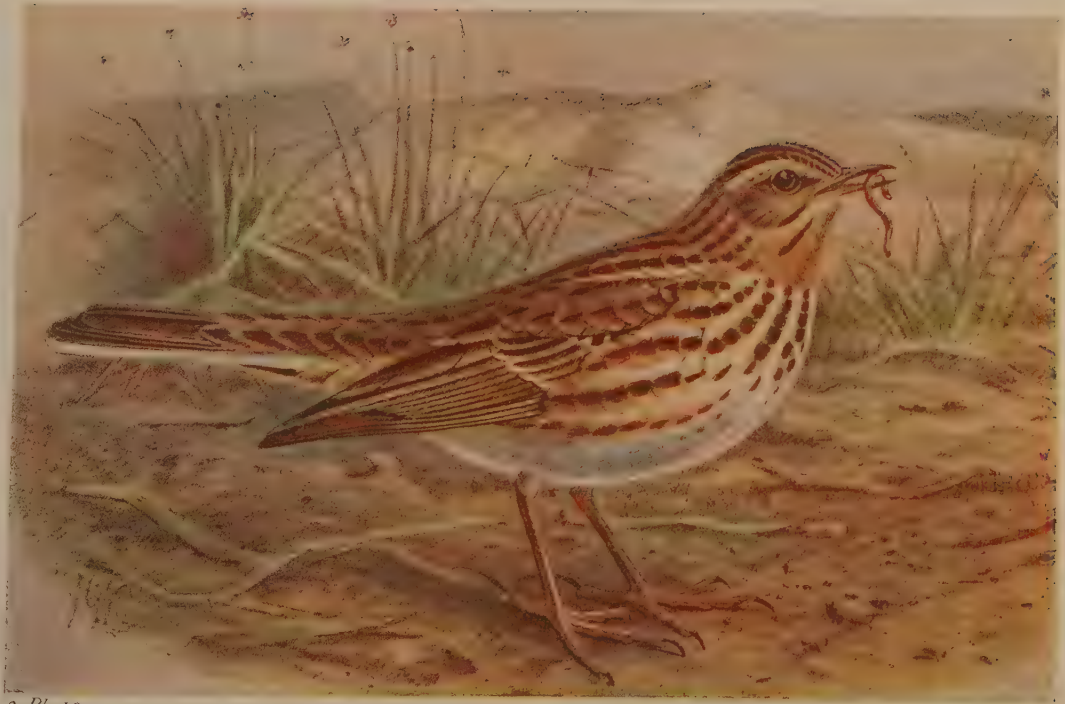
My experiences of the Lesser Grey Shrike (Plate 24) are limited, but I had no difficulty in recognising it by its grey back and warmly tinged breast and flanks even when seen from a moving train; one I saw on telegraph wires, another perched conspicuously on a post beside a vineyard, but Col. Madoc had an excellent view of one which, Shrike-like, had chosen the very top of the tallest tree for its perch.

Family BOMBYCILLIDÆ. The Waxwing.

Considering that the Waxwing breeds in Arctic Scandinavia, Russia, and Finland, and that it regularly migrates south, at

3 *Pl.* 18. *H* 110.

Dartford Warbler. (pp. 115, 264).



3 *Pl.* 19.

Red-throated Pipit. (pp. 104, 258).

H III.

any rate to Germany, it is rather surprising that it is not seen more frequently in the Scottish Islands. Its visits to the East Coast of Scotland and England are not infrequent but always irregular, and the numbers vary so much that we usually consider it as an invader, classing its movements with those of the Sand-Grouse. This, perhaps, is a mistake; the bird has what we might call good or bad breeding seasons, and a good one is followed by a noticeable westward spread in autumn. The last large invasion was in the winter of 1913–14, but there was much immigration in the autumn of 1920, and in the winter of 1921–22, birds were observed in numbers in many places and even reached western counties.

Family MUSCICAPIDÆ. The Flycatchers.

The Spotted and Pied Flycatchers are regular summer residents, and passage migrants between Northern Europe and Africa, the former sometimes wintering in South Africa. Both, as a rule, arrive from the second week in April onwards, but are seldom abundant until the beginning of May; the Pied often comes a week or more before the Spotted Flycatcher (End paper), which is one of our later migrants. Southward movements begin early in August, and may last until October. The passage of the Pied Flycatcher is mostly observed in May, for the males are conspicuous; apparently many, if not most, cross the North Sea from some place on the East Coast, frequently Norfolk or Yorkshire, for the bird is not common in northern Scotland, though it is known on both passages in the Northern Isles, especially Fair Island. The passage movements of the Spotted Flycatcher are generally in August and September.

The Red-breasted Flycatcher, though a rare bird, is also a passage migrant, being noticed as a rule in autumn; the birds no doubt come from Russia or perhaps Denmark, but may, usually, travel south to their still uncertain winter quarters

along the western shores of Europe, where, especially at Heligoland, they are more frequent than in Britain. Dr. B. B. Riviere remarks that when they occur in Norfolk it is, as a rule, after easterly winds. In September and October, 1922, birds were recorded from Lincoln, Holy Island, and Isle of May.

The Eastern Asiatic Brown Flycatcher has been once recorded, and the White-collared Flycatcher, which has a Central and Eastern European range, in two different Mays, four males having been shot. All these birds were in Sussex, as was one seen, but not recorded, by Dr. K. J. P. Orton in May, 1923.

The entrance to the nesting hole of the Pied Flycatcher (Plate 17) is as a rule very small, but where the birds are almost abundant suitable holes are difficult to find. In 1921 I found three pairs nesting in hollows with wide entrances, and in all three the eggs were visible, and a hand could be thrust into two; one of these nests was robbed, but, immediately, the birds began to build in a fresh hole, fortunately out of reach, and in the largest hollow of all I watched the birds from building until the young were safely brought off.

Family SYLVIIDÆ. The Warblers.

The Whitethroats.

The Common and Lesser Whitethroats, passage migrants and summer residents, begin to appear early in April, though in both species many March arrivals have been noted; it is not, however, until the month is well advanced that the main immigration takes place. Throughout May there is considerable passage along our shores or inland, birds occurring in the Orkneys and Shetlands, evidently on their way to Scandinavia, where they nest at a higher latitude than the Shetlands. In Lancashire and Cheshire and North Wales the Common Whitethroat may be looked for about the third

week in April, and the Lesser is seldom far behind it, but in many years neither is seen until May.

How many of the later birds are on passage is hard to say, but in Cumberland in 1921 a very marked movement was noted on June 20th, more than a month after the resident birds had settled down.

Return migration occurs throughout September, but there is some emigration of nesting birds in August, and there are many records of October passage and even of departure in November. The Lesser Whitethroat has been known to leave at the end of July, and a lingering bird was shot in Herefordshire on December 15th, but it may have been unable to travel.

The Siberian Lesser Whitethroat is known to have wandered so far west as Fair Island in three different autumns.

The Blackcap, Garden-Warbler, and others of the Genus *Sylvia*.

The two best-known members of this group are the Blackcap and Garden-Warbler, both summer residents and passage migrants. The Blackcap is one of the earlier immigrants, often reaching the South Coast in March, though the main migration does not as a rule begin until the middle of April. Passage along the East Coast is observed during May, and sometimes until the middle of June, but it seems probable that most of these birds travel from the English or Scottish shores towards Southern Scandinavia, for this species is less frequent on spring passage in the Northern Isles than some of its congeners. In autumn, however, the return course seems to be west and south-west, for it is well known in the Orkneys and Shetlands, and especially in Fair Island. Some of the early dates of arrival in spring may be due to northward movements of birds which have spent the winter in southern counties, but March observation of birds at the lights is not

unusual. Emigration begins in August, and returning passage birds are noticed well into October.

The Garden-Warbler, which is not known to winter in England, is a little later in spring than the Blackcap, though arrival in March is known; the main immigration is in late April or early May, and passage northward continues until June. My earliest Cheshire date is April 20th. In the Northern Isles the Garden-Warbler is a more frequent spring visitor than the Blackcap; its range in Scandinavia is more northerly. Return migration roughly corresponds with that of the Blackcap; there are a few late October and November dates.

The Barred Warbler, a passage migrant more frequent in autumn than in spring, does not nest far north, but is not infrequent in Scotland, not only in Orkney and Shetland but in the Hebrides, Skye, and western counties. It has been recorded from Irish lights, and once or twice from the West Coast—Lancashire and Anglesey—but most records are from Norfolk.

The Orphean Warbler (Plate 24), a Mediterranean species which has nested in Northern France, has been recorded four times from southern counties and once from Yorkshire. In the last place the bird was suspected of nesting, and one record is of a young bird which it was thought could not have flown far; it is possible that the migrations may have been attempts to extend the range. This, too, may explain the presence in Sussex in June of a Sardinian Warbler, another South European species, but hardly that of two male Ruppell's Warblers, shot in the same county in June; the breeding range of this species is from the Eastern Mediterranean eastward.

In South France we found the Orphean Warbler easy to recognise by its dark head, blackish in the male, browner

3 *Pl.* 20 *H* 114.

Nest of Savi's Warbler. (pp. 119, 264).

3 *Pl.* 21.

Tawny Pipit. (pp. 104, 259).

H 115.

in the female, and greyish-brown in what we thought were young birds of the year, by the white chin and tail margins, and, when seen at close quarters, the reddish eye-rims; the pale edges of the coverts were very distinct when the wings were closed. The call was a quick *pit, pit, pit*, uttered as the birds dodged in and out of the trees in an orchard, where they were frequently hidden by the thick foliage, but did not evince the caution and excitement of many of the other warblers.

The Sardinian Warbler, which was much more abundant, is an excitable, restless bird, which would give few opportunities for observation were it not so inquisitive. We found it in the littoral and in the "maquis" on the hills up to at least 1,200 feet. It is a very grey bird, with its black head and white throat in striking contrast—the head of the female is grey—and with a long graduated white-bordered tail, which it constantly raises and spreads, jerking it upwards, as it dodges through the undergrowth. Every now and then it comes to the outer edge or the top of a bush, uttering a curious purring note, which suggests surprise rather than alarm, but the ordinary call is a quick, rather harsh *put-it-it-it*. The excited bird raises its crest as it calls.

The Garden-Warbler, like many other birds, makes use of the most available nesting material. One nest I found was lined with nothing but black hair; a black-coated goat was tethered close to the nest. Another Garden-Warbler, which nested in a Surrey garden, appropriated the nest of a Robin after the owner had finished with it, and reared its young in the borrowed home.

The Dartford and Subalpine Warblers.

The Dartford Warbler (Plate 18) is sedentary, and beyond very occasional and not extensive wanderings shows no desire to migrate. There is one record of its occurrence at a distance,

for on October 27th, 1912, one was captured at the Tuskar Light, Wexford, and submitted to Barrington, who identified and recorded it, stating that on that and the previous day a strong gale was blowing from the south-east, and suggesting the probable explanation, that the bird was blown from England. It was our sub-species and not the typical bird of South Europe.

On three occasions the South European Subalpine Warbler, another normally sedentary species, has been discovered in the British Isles, and in each case on a northern island, and not, as one would expect, on the south coast. The first was shot on St. Kilda in June, 1894, the second taken at Fair Island in May, 1908, and the third on the Isle of May on May 30th, 1924. These three records of birds examined by expert ornithologists present a problem of extraordinary perplexity. The St. Kilda bird was noticed by Mr. J. Steele Elliott the day after a fierce gale from the south-west; we can only imagine that it had been carried out to sea, probably from Spain, by an easterly current, and then swept round towards the north-east. The wind which could carry a bird for so great a distance must have been remarkably steady and strong.

There is a family resemblance between the Subalpine Warbler and the Dartford, not only in plumage but in action; both make the same use of the tail, raising and spreading it when curious or excited. The slate-grey back and ruddy under parts are very much paler in the Subalpine, its white-bordered tail is shorter, and it has a conspicuous white streak below the eye. On the throat there are no spots like those on the Dartford. The eye-rims, described as orange, struck me as noticeably red in life.

On the lower slopes of the Maure Hills we found the two species together, but the Subalpine was the commoner of the two in the littoral, and the Dartford was present at a greater

altitude. The Subalpine Warbler is not exactly skulking, but it is so active in the dense undergrowth, yet so inquisitive, that it is exceedingly difficult to obtain more than a momentary glimpse; it suddenly appears with uplifted tail and a quick call—*pish-er*, and as suddenly dives headlong into a bush.

In the impenetrable tangle or "maquis" of calycotome, cistus, and other prickle-armed plants the Dartford Warbler, the southern form, is very much at home. In late September and October we found the bird in song, constantly uttering a delightful melody which seemed to me to be evolved from its call, *pitoo, pitoo, pitoo*. When the bird suddenly appeared for a second it usually uttered a churr of annoyance, or a harsh *tchee, tchee, tchee*, as it vanished from sight, to reappear a few yards away after a rapid traverse of the low bushes. It was not, however, only on the stony hillsides where these low prickly bushes cover the slopes, but was not uncommon in the undergrowth in the cork woods. There we found some indulging in what Mr. Abel Chapman calls "unseasonable erotism," for in one place two males were displaying, with song, before a female; they hopped on to and along a fallen trunk, oblivious of our presence, with their jaunty tails almost as much elevated as those of nuptially excited Wrens.

The Genus *Agrobates*.

The Rufous (Plate 27) and Brown-backed Warblers are both on the British list, but their occurrence is surely due to accident. The former is a native of the Peninsula, and has occurred only in southern counties and in S.E. Ireland. One example, at the Start in 1859, was noticed after a strong southerly gale. It has only been met with in autumn, but the four occurrences of the eastern Mediterranean bird have been in Kent or Sussex in spring.

Col. H. W. Madoc and I were lucky enough to catch sight

of the Rufous Warbler on the banks of the Rhône on the western or Languedoc side. It is usually said to be unknown in France, but M. l'Hermitte (47) states that it has, certainly once, nested near Nîmes, less than twenty miles from where we saw it. Its mellow notes, sudden in delivery, but not so explosive as those of Cetti's Warbler, which we heard repeatedly at the same time, called our attention to the large rich brown bird that was hopping amongst the figs and olives in an orchard. It was when we saw it spread its long graduated tail, and caught sight of the conspicuous white tips, that we felt satisfied with our identification. Mr. H. F. Witherby says that the song, which he heard in Spain, "is somewhat disjointed, composed of short phrases of clear, lark-like notes which form its distinctive characteristic." To which of the two sub-species our bird was referable we cannot say. Mr. Collingwood Ingram (48), is not convinced of the accuracy of the Nîmes nest, and believes that five examples recorded by Arrigoni from near Nice should be assigned to the Eastern *A. galactotes syriacus*, though he has not been able carefully to examine the specimens. A sixth received from the same place by Giglioli has been recorded as the Spanish and African form.

The Grasshopper-Warblers.

The Grasshopper-Warbler (Plate 25) is now the only regular summer resident of this group, for Savi's Warbler has ceased to visit us to nest for about half a century. There is some evidence that the Grasshopper is a rare or occasional bird of passage, for it has been noticed at Fair Island. Immigration is, as a rule, late in April or in May, but there are records of arrivals early in April, mostly, though not all, from the South Coast lights. April 9th, 1909, for Cardiganshire, is perhaps the earliest; the bird seldom appears in Cheshire before the last week of April. August and September are the

months for departure, though it has been seen in some numbers at the Eddystone at the end of the latter month.

Savi's Warbler was, up to the middle of the last century, a summer resident, but has occurred only twice within recent years. Dr. Eagle Clarke obtained it at Fair Island in 1908. Its song, which I heard in Holland, was louder and clearer than that of the Grasshopper Warbler, a rapid rattling repetition of one note, a rather metallic *ting*. Temminck's or the Lanceolate Warbler has also visited Fair Island, and has been taken on the Pentland Skerries and in Lincolnshire, but this is less astonishing, for it is a northern Asiatic species, and had evidently wandered west instead of south; both it and Pallas's Grasshopper-Warbler, another Siberian bird which was killed at the Rockabill Light, Ireland, in 1908, as recorded by Barrington (49), have been met with at Heligoland. Plate 20 shows the nest of Savi's Warbler, photographed in Holland, compared with that of the Grasshopper-Warbler.

Cetti's Warbler, not very nearly allied to this group, has a South European range, and has been recorded from Sussex, twice in spring and once in autumn; its presence was no doubt due to error of orientation or to strong winds.

We found Cetti's Warbler common on the banks of the Rhône, but, though its full, short, almost explosive notes were heard frequently, the bird was elusive, dodging along the water side of the willows which line the steep muddy banks. These notes are sweet, and I quite understand the suggestion that they resemble the beginning of the Nightingale's song, but stop as suddenly as they begin. The bird gives an occasional churr, but hardly an alarm note.

The Reed- and Marsh-Warblers.

The Sedge-, Reed-, and Marsh-Warbler are three regular summer residents, and this is their order of appearing in spring. The Sedge-Warbler is not an early immigrant, usually arriving

towards the end of April or early in May, though in most years some birds are noticed during the first half of the former month; indeed, in 1914 I heard and saw one in Cheshire on April 2nd, and a friend met with another, in a spot some miles distant, three days later. Except for this, the 15th and 16th are my earliest noted dates, and it is often the end of the month before many arrive. Passage migration continues until the end of May or beginning of June, and return migration, which as a rule begins in August, ends, except for a few stragglers, in September. In 1912, single birds were taken at the Hanois Light, Channel Islands, on the nights of July 16th and 24th. The Reed-Warbler, which has a more southern range in Britain, is as a rule a few days later than the Sedge; my earliest Cheshire date is April 17th. This species shows little evidence of passage migration, beyond its occasional appearance in northern isles and at Irish lights. It leaves in August or September, but there is an interesting record of a bird which came aboard a liner in the Bay of Biscay on October 23rd, and another was seen on the Yorkshire coast on this same date some years later. The Marsh-Warbler is a very late immigrant, sometimes not appearing until early June; its range in England is more southerly than that of the Reed, though it has been recorded from Fair Island, and once from St. Kilda.

The Aquatic Warbler, a Central European species, has occurred so often that it may be counted a frequent though hardly regular passage migrant in autumn. It has been recorded from Fair Island, Irish lights, and eastern and southern counties in England. Blyth's Reed-Warbler, from Russia or Central Asia, has been met with on autumn migration at Fair Island and in Northumberland, Yorkshire, and Norfolk.

The Great Reed-Warbler (Plates 26, 27), whose range is much nearer Britain, is an exceptional or accidental wanderer, mostly observed in spring and summer. It winters far south

3 *Pl.* 22. *I* 120.

Wall-Creeper. (pp. 106, 259).

3 *Pl.* 23.

Marsh-Warbler. (pp. 121, 265).

I 121.

in Africa, but apparently wanders little from its normal haunts. The Eastern form of this bird has been once recorded.

Much has been written about the imitative power of the Marsh-Warbler, and when I visited a thriving colony and listened to many birds, I certainly heard notes exactly similar to some of the Song-Thrush, Nightingale, Sky-Lark, House-Sparrow, Swallow, Linnet, and Whitethroat, whilst one bird repeated an excellent reproduction of the call of the Partridge. There were many Sedge-Warblers singing near, but the Marsh- never once introduced the harsh notes of this bird into their varied songs. The situation of some of the nests that we saw was interesting, a small withy bed with a smoking brick-kiln on one side, and a town-tip, also smoking, on the other. Every nest we saw had the "basket handles," some fixed to only three stems, and in several cases the nests were suspended, the handles an inch or more above the rim. The open mouths of the vigorously singing birds looked quite yellow. Mr. J. A. Walpole-Bond (50) has given a full description of the nestlings at various ages; he described the mouths of the unfledged birds as mustard-yellow with two dark tongue spots. M. Burdet's photograph of the Marsh-Warbler (Plate 23) was taken in Holland.

The song of the Great Reed-Warbler is louder and harsher than that of the Reed-Warbler. In Holland I saw nests on reed stems, very like large nests of the Reed-, the stems passing through the rim and not through "basket-handles." Some contained eggs marked like those of the Marsh-Warbler, and in one the young were ready to fly. The old birds, showing distinct creamy superciliary streaks, scolded vigorously with a harsh *kraak, kraak.*

Icterine and Melodious Warblers.

The Icterine and Melodious Warblers are so similar in appearance that many of the records of their presence, when

the birds were not obtained, must remain doubtful. Apparently one or the other, perhaps both, have nested or attempted to nest in England, and so become occasional summer residents. The European range of the Icterine is more northerly than that of the Melodious, and the former has been met with so often, not only in Norfolk and other English counties, but now and then in northern isles and in Ireland, that it may be more frequent as a passage migrant than is suspected. The Melodious Warbler does not nest far enough north to visit us on normal passage, and its visits, infrequent even to England, must be either accidental or due to an attempt to extend its range; strong winds or lost wanderings must surely explain its appearance on the Isle of May and at Kinsale Light.

Three other Warblers may be mentioned as having been recorded as lost or accidental visitors—the Moustached Warbler from Spain or southern Europe, the Olivaceous Warbler from further east, and Radde's Bush-Warbler from eastern Siberia.

Mr. E. M. Nicholson (51) describes the song of the Icterine as "very scratchy and harsh," and noticed that the female bird sang softly. Dr. C. Cairnie, however, tells me that he found it "a most indefatigable and delightful singer," but comments on the variation in the song and the occasional strident notes. I agree with him after hearing the bird in Holland. The Melodious I saw in the south of France, where its very prominent yellow superciliary streak, emphasised by a dark line through the eye, struck me as a noticeable feature, but did not hear it sing.

The Leaf-Warblers.

Eleven species or sub-species of *Phylloscopus* are on the British list, but three only are regular, and abundant, summer residents. The Chiffchaff is the first to come, and indeed is one of the early spring visitors; it has been recorded in the

3 P. 21

I 122.

3 *Pl.* 25. Grasshopper Warbler. (pp. 118, 264) *I* 123.

first week of March, and usually announces its arrival, even in the more northern counties, before the end of the month. Successive waves of immigration continue throughout April, and passage lasts well into May. The European range of the Chiffchaff does not extend far to the north, and the bird is not frequent on passage in Scotland and the Northern Isles. Emigration is in August and September, but October departure is not rare, and later dates have been recorded; but neither very early nor late dates may be due to oversea travel, for the bird has many times remained in winter, by no means always in the south. The Scandinavian and Siberian forms have been recorded at Scottish and northern lights, usually in autumn or winter; indeed, the former bird seems to be a regular passage migrant at Fair Island.

The Willow-Wren quickly follows the Chiffchaff, and there are reliable records of arrival in the second week in March, but the bulk do not come until the beginning of April, and they speedily make their presence known; passage continues until June, and the bird is an abundant passage migrant along both coasts and in the Northern Isles. Return migration from North Europe is steady throughout August and September, and often well into October. The Northern Willow-Wren, the Siberian bird, has been noted on both coasts and is a regular passage migrant. At Scolt, in May, 1924, I saw numbers of typical Willow-Wrens and Chiffchaffs, and also several much greyer birds—indeed, one was remarkably grey and white—which I am sure were northern migrants, but they were so elusive, dodging in and out of the suæda bushes that I dare not say to what form they were referable; Miss E. L. Turner, who saw the birds at the same time, was equally certain that they were not our forms.

The Wood-Wren is the latest of the residents, seldom coming before the middle of April; it is also a passage migrant, noticed at northern isles, but less frequently than the Willow-Wren.

Return migration is in August and the first half of September, though occasionally later; indeed, in 1910 several boarded a liner in the Bay of Biscay on October 22nd.

The Yellow-browed Warbler is a Siberian bird that usually travels southward to winter quarters, and yet it has occurred so often in autumn in the Orkneys and Shetlands, and at various places on the East Coast, that it must be classed as a regular passage migrant. We do not know of winter quarters in South Europe or Africa, though it has been noted as a straggler to Italy, but it would not be surprising to hear that it has been overlooked. Indeed, though I do not regret that I cannot prove it with a specimen, I am convinced that Col. H. W. Madoc and I saw two in the south of France. On October 3rd, 1924, when many birds were passing, we saw a small greenish-yellow warbler, with a double whitish wing-bar, and a very well-marked pale yellow superciliary stripe; beneath it was tinged with pale sulphur yellow, whiter on the belly. This bird was on the coast, but on the 8th we saw another (or the same) on Port Cros (Iles d'Hyères), which was so obviously weary that we could walk round it as it rested on a small tree, and see, from a few feet away, that it had a pale central line on the crown.

Doubtless our identification will be questioned by those who are never satisfied unless they see specimens, but it is worth noting that in the previous October, that of 1923, an unusually large number of Yellow-browed Warblers passed Heligoland and fifteen were shot; these birds were not necessarily seeking winter quarters in South-East Europe or Asia, but if they were would probably travel by the cross-France river route.

The Greenish Warbler from Russia has been taken in Lincolnshire; Pallas's Warbler and the Dusky Warbler, Siberian birds, the first in Norfolk and the second in Orkney and Sussex; and the Arctic Warbler four times in the Northern Isles, once in Norfolk, and once in Northumberland.

Unfortunately very few ringed Warblers are recovered, but some indication of the routes taken, though not necessarily of winter quarters, may be gleaned from the recovery of a British ringed Willow-Wren in Portugal, and of a Wood-Wren in Italy.

Family TURDIDÆ. The Thrushes.

Three of our familiar Thrushes, the Mistle-Thrush, Song-Thrush, and Blackbird, are what was formerly called Partial Migrants; some British birds emigrate and some winter at home. The migration of the Song-Thrush, carefully investigated, showed a general southward movement, emigration in the south, immigration and passage on both coasts, and considerable movement to Ireland; but the discovery that there were two forms, British and Continental, complicated the conclusions. The idea that all our British birds emigrated and were replaced by birds from further north in winter, proved to be but partially correct, for ringing showed that whilst some British nesters went abroad to France, Portugal and Spain—possibly to Africa—many remained all winter, especially in the neighbourhood of towns and villages. Passage movements of British or Continental birds, for the forms are not readily distinguished in the field, is very evident from August to September, whilst July movements are not uncommon, and the species is one of the first birds to return—often noted at the lights in February. As might be expected Continental birds have been recognised at northern stations as well as on the East and West Coasts. Some occur inland, and a note of Mr. A. Astley's (52) of a large flock of light birds seen at Ambleside early in October seems to refer to this form.

The passage movements are further complicated by the discovery that the small, dark Hebridean bird, formerly thought to be sedentary, moves down the West Coast, and possibly

inland. I have often seen parties of small dark Thrushes in the Cheshire fields in autumn, and others have noticed them —Mr. Gladstone in Dumfries and Mr. Aplin in Lleyn, for instance, but it was not until Mr. E. R. Paton (53) shot one out of a flock in Ayrshire that the form was actually identified as a migrant; Dr. N. F. Ticehurst examined this bird. Whether this race has a wider breeding range than the Outer Hebrides is still uncertain.

The movements of the Mistle-Thrush and Blackbird correspond closely with those of the Song-Thrush, though they are never so extensive. So far no distinction has been found between British and Continental birds. Scottish and English ringed Mistle-Thrushes have been recovered in France. Immigration in autumn is most marked on the East Coast between late September and the middle of November, and in both species, as in the Song-Thrush, there are occasional large winter movements, the result of exceptional weather conditions, and passage to Ireland.

The Ring-Ouzel is a regular and early summer resident, and a passage migrant to Scandinavia. Arrivals before the middle of March are not uncommon, but passage continues until May, and birds have been noted at Fair Island so late as mid-June. The Ring-Ouzel is not known to nest in Shetland, though it has nested in Orkney, but on June 25th, 1925, I distinctly heard one in good song on the slopes of the Virda Field, but failed to locate it when I crossed the valley and ascended. Nesting quarters on the Pennine and Peak moors are, as a rule, reached from the third week of March onwards to the beginning of April; I have an apparently satisfactory report of a bird seen on March 8th, but this individual, like some seen in November, may have been wintering, for there are many reliable records of birds remaining all winter, even on the moors. Return migration and passage is noticed from the end of August until early November; I have seen the bird

I 126.

3 *Pl.* 26.

Great Reed-Warbler. (pp. 120, 265).

3 IV. 27.

Great Reed-warbler. (pp. 120, 265)

/ 127.

Rufous Warbler. (pp. 117, 264).

on the hills on November 2nd. The Alpine Ring-Ouzel from Central Europe has been taken in southern counties and reported from farther north, but mistakes of identification have been made, and Dr. B. B. Riviere (54) found that a Norfolk specimen was incorrectly recorded.

The Fieldfare and Redwing are winter visitors and passage migrants from Northern Europe; they arrive as a rule late in September, and spread inland or pass down both coasts at frequent intervals until the end of November, many wintering in Ireland. Returning birds from winter quarters in Europe or North Africa join our departing winterers from March to May, some lingering until June or July, and Redwings have been observed in August.

White's Thrush (Plate 29), a Siberian bird, has been so frequently met with that it may be classed as a rare, irregular, winter visitor. The Dusky Thrush is another Siberian bird that has frequently straggled to Europe, and has reached England on at least two occasions, and the Black-throated Thrush, from Siberia or other part of Western Asia, four or five times, and three of the birds obtained were in Kent or Sussex. In February, 1922, Mrs. J. Johnson described to me a bird which she had seen in and near her garden at Tunbridge Wells. It looked a little larger than a Song-Thrush, seemed to be slate-grey rather than brown above, and had an almost black throat and upper breast; the rest of the underparts were white or very pale grey. This description suggests the Black-throated Thrush.

I found the Hebridean Song-Thrush easy to recognise, both in Barra and Harris, by its dark back and very black spots on its breast. At daybreak on the former island the birds were singing in chorus with Larks and Wheatears, and as there are no trees they perched on rocks, or the chimneys of the houses or gables of the crofts. The song struck me as having

much of the same quality as that of the Ring-Ouzel, but this impression may have been partly due to the wild surroundings. Mrs. Meinertzhagen finds that Thrushes from Mull and Coll approach the colour of the Hebridean birds.

In the spring of 1922 I saw a Mistle-Thrush building a second nest whilst still feeding a single young bird in the first nest; when I last saw it the young one had flown and the bird was brooding eggs in the second nest.

The age attained by wild birds is never easy to estimate. Mrs. Brindley (55), however, shows that a Blackbird, distinguished by a peculiar white spot, frequented the gardens at Newnham for eight years, and, under the name of "William," was well known. After William disappeared, another white-spotted bird, William II., took his place, probably in hereditary territory.

The winter singing of the Redwing has been questioned, but Mr. L. Gill (56), supported by Mr. H. G. Alexander, confirms it; I am glad to have two such good observers adding their experiences to mine. Mr. Alexander wisely asks what is the "true song" of a bird?

The Rock-Thrush (Plate 30), a bird of South Europe and North-West Africa, has wandered north several times, even so far as the Pentland Skerries, but its visits are hardly due to genuine migration.

The American Robin, *Turdus migratorius* Linn., which nests in Labrador and Newfoundland, has been reported several times in the British Isles and on the Continent. All records are rejected by the B.O.U. Committee, and by the editors of the *Practical Handbook*, under the belief that the birds have escaped or been intentionally released from captivity, since attempts at introduction have been made. Nevertheless I feel rather strongly that natural though misdirected migration is more likely to have brought some over by a Greenland-Iceland route than that all should have had assisted passage.

3 *P.* 28

I 128.

Little Owls—young. (pp. 152, 275).

3 *Pl.* 29. White's Thrush. (pp. 127, 268). *I* 129.

There are birds accepted as examples of lost wanderers which must have followed much longer and less rational routes. A. G. More examined a bird in the flesh which was shot near Dublin in May, 1891, and Seebohm saw the skin immediately afterwards; both were sure that feet and feathers showed no sign of captivity. Another was caught alive at Dover in April. Spring occurrences are more puzzling than those in autumn and winter, for example, a bird killed at the light on Heligoland in October, 1874, and one caught near Leicester in October, 1893, when consorting with Redwings. But if we grant that many birds (Waders certainly do) travel south and east from North America in autumn, we must acknowledge that the migrants, if they survive the winter, may attempt to return in spring by the same series of aerial bridges from island to island.

Redstarts, Redbreasts, and Nightingales.

The Redstart and Nightingale are summer residents, the Black Redstart a winter visitor which has nested in England, and the British Redbreast an occasional oversea migrant. Reports of early or late Redstarts must be treated with caution, as undoubtedly many Black Redstarts have been recorded as Common Redstarts, yet the normal immigration begins in the first week of April, and occasional March birds have been taken, even in the Northern Isles. Main immigration is not until the end of April, and lasts throughout May, and even into June, though many of these birds pass north along both coasts and cross to Scandinavia. My earliest record for Cheshire is interesting, for on April 11th, 1920, Mr. C. E. Gadd saw a female bird; the following day Mr. H. G. Alexander saw his first near Birmingham, also a female, but it was not until the 18th that males and females were distributed in Cheshire. Emigrating Redstarts have been taken at St. Catherine's

Light early in July, but the bulk do not leave until September. Autumn immigration of passage birds is by no means always by the Shetland route, for along the coast, especially at Spurn and Norfolk, birds come in off the sea. At the Pentland Skerries a bird was killed on November 7th.

The Black Redstart has a less northerly range, and is casual in Scandinavia, yet it is a regular passage migrant at Fair Island and has occurred at other northern stations. That these birds travelling to and from winter quarters in the British Isles or beyond follow a West Coast as well as an East Coast route is certain, and this westerly passage is, I am convinced, more regular than is supposed. There are a few scattered records for western Scotland, including one at Skerryvore in October, and five from the Solway; the bird has occurred at both lights in the Isle of Man—I handled one of these birds—and has been seen there by several good observers, and I have many records for Anglesey, where I have seen the bird myself, and from Carnarvon, where Mr. R. W. Jones sees it every year. On November 1st, 1925, Dr. K. J. P. Orton saw two in Anglesey, nearly opposite the Great Orme, where Mr. Jones sees the birds regularly. As a winter visitor it is common on the South Coast, especially in the west; and as Mr. Jones saw the bird on January 3rd at Llandudno, and Mr. F. W. Holder tells me of one near Southport on January 13th, it is evident that some winter further north. Recent information from Somerset and Dorset proves that it is as regular there as in Cornwall and Devon; indeed, it is lack of observers which explains the supposed scarcity. Birds coming to winter or on passage often reach the Northern Isles and the South Coast in September, and return migration occurs from March until the end of May, or even June.

The Nightingale comes towards the end of April, though occasionally in the first week, and leaves early in August, though it has been noted at the end of September at the Hanois

Light, Channel Islands. A bird taken on the Isle of May in May, 1911, suggests accidental wandering rather than passage migration. The large Baltic Thrush-Nightingale was taken at Fair Island in the same month and year, and there are other reports, but this bird, apparently, usually travels to and from its East African winter quarters by a more easterly route.

If we accept the segregation of the races of Redbreast, and believe that the knowledge of the geographical distribution of the British and Continental birds is complete, we must admit that very many of those recorded on migration have not been critically examined, so that it is doubtful if we can indicate reliably the movements of one form or the other. We do know, however, from ringing, that many British birds are sedentary, that others move south in autumn, and that some, at any rate, cross the sea to Holland or France ; we do know, too, that there is extensive passage migration along the coasts of the British Isles, more noticeable in autumn than in spring, and that some birds taken at the Isle of May—presumably off sea, though that cannot be proved, were identified as British. At any rate, Redbreasts are moving south from August until late in November, and north from February until May, and it is supposed that the later movements are, as a rule, of Continental birds.

In the south of France, and especially on the island of Port Cros, we were greatly struck with the difference in behaviour of the Continental Redbreasts from the normal familiarity of the British bird. It is true that even a Redbreast has reason to distrust man in this district, but these birds were on passage —they were swarming on the island, where they are, we were told, unknown as residents—and had probably come from the north. They clicked and sang all round us, but it was most difficult to get more than a glimpse of them as they dodged through the maquis ; inquisitive enough to approach us, but

most careful to keep out of sight. On the same island, on October 8th, we saw the Black Redstart.

Mr. H. F. Witherby (57) gives an entertaining account of an unusually bold and agressively pugilistic Robin which defended a nest in his garden, and in a neighbour's garden I had somewhat similar experiences. The bird stood on guard at the entrance of its nest, and furiously pecked and struck at my hand.

In the 1925 edition of Series I., I was able to state that I had seen young Black Redstarts, hatched in 1924 in a nest on the South Coast. The discoverer, who wishes name and locality to be kept secret for the sake of the birds, found the nest first in 1923, and took me to the spot when a brood had left the nest on June 14th, 1924. The nest was in a crack in the face of the cliff. The young birds were a soft mouse-grey below, and their bills looked very white ; the upper parts were brown, as in the female. My friend had spent many hours watching the old birds feeding the young in the nest, in May and June in both years. In 1925 at least two pairs nested and brought off young.

The Bluethroats and Chats.

The Norwegian Bluethroat is a regular bird of passage on the East Coast, though less frequently met with in spring than in autumn. It is seen generally in September and October, and on the return journey is most frequent in May. The chat-like actions in the bushes of a female, without blue on the throat, that I saw in Norfolk early in May, struck me at once, even before I saw the tail with the distinct chestnut bases of the outer feathers. Probably most Bluethroats travel to and from Scandinavia by a southern sea-crossing, perhaps *via* the eastern shores of the North Sea, for they are common at Heligoland ; there are few records for the Scottish coast,

although many for Fair Island, the Isle of May, and other northern stations. Some travel down the French coast; we met with it near St. Jean-de-Luz in September.

The White-spotted Bluethroat has a more southerly range, and most of the few occurrences in Britain have been on the South Coast. It has occurred at least three times in spring on Fair Island. The Lapland Bluethroat has been twice killed on the Isle of May, in September, 1909, and May, 1910.

The Whinchat (End paper 2), a summer resident, arrives between the beginning of April and the end of May, in largest numbers towards the end of the earlier month. Northward passage is in May and early June. My earliest Cheshire date is April 11th, but in most years the bird is much later in appearing. Emigration and return passage is in August and September, but many October departures have been noted on the South Coast, and November 9th, 1890, is a very late date from Ireland.

The Stonechat is but partially migratory, though most move south in autumn; small parties on passage appear in Lancashire and Cheshire in September and October in districts where they do not nest. In the *Practical Handbook* it is stated that birds which pass Fair Island may be of the Continental form, so far unrecognised in Britain. The Indian Stonechat, a Siberian and Central Asiatic bird which is named after its winter quarters, has been at least twice met with in autumn—in Norfolk and Fair Island.

The Wheatears.

The Wheatear (End paper 1) is the first summer visitor to appear in most years, and is often well distributed by the middle of March. February Wheatears are not uncommon, and in 1912 a single bird was recorded from Sussex as seen on January 6th, and several reached Suffolk on February 28th. In the report for that year the next dates are March 6th for birds in

Somerset and Oxford, yet Mr. R. W. Jones saw one on the Great Orme on March 1st. West Coast Wheatears travel fairly fast in some years, and my annual reports from three stations—Aberystwyth, Llandudno, and Southport, show that in most years the birds arrive between the 10th and 13th of March, though they are as a rule later in reaching breeding quarters on the hills. Thus in 1912 it was March 16th before the birds were seen on the Pennines, 1300 feet above the sea. Mr. Miall Jones (58), who keeps a watch near Aberystwyth, saw the bird on February 25th in 1921, but that was exceptionally early for Cardigan Bay. From the end of March birds move steadily northward, some passing to Scandinavia, even so late as mid-June, but in July southward movements begin. Birds have been seen departing at southern lights so early as July 10th, but throughout autumn there is a gradual southward passage, still noticeable in October, and, even in the Hebrides, a Wheatear was seen so late as November 20th.

The large Greenland Wheatear is a regular passage migrant along the coasts or through the country, passing north late in April or May until the beginning of June, and south during August, September, and October, and occasionally in November. In addition there are casual visitors, which so far cannot be claimed to be regular migrants. Two forms of the Desert Wheatear have been met with, the Western bird, possibly from Africa, in autumn or winter, certainly so far north as Yorkshire and perhaps Scotland, and the Asiatic Eastern form on the South Coast in spring, as well as at the Pentland Skerries. From the western Mediterranean the Black-eared Wheatear (Plate 35) has wandered in both spring and autumn, reaching Fair Island and Ireland as well as the South Coast, and the eastern race has, more rarely, been recognised in spring. The Pied and Isabelline Wheatears (Plate 33) from south-eastern Europe or western Asia have appeared in Orkney, on the Isle of May, and other places, whilst two Mediterranean forms

3 W. 30.

Rock-Thrush. (pp. 128, 268).

A 134.

3 *Pl.* 31.

Young Montagu's Harriers. (pp. 155, 275).

A 135.

of the Black Wheatear have strayed to Sussex and Fair Island.

In the Camargue, Little Riviera and Western Pyrenees, Common and Black-eared Wheatears were passing in late September and early October; the latter birds constantly perched on low bushes and trees. On the coast near St. Jean-de-Luz, we saw a single Isabelline Wheatear, a large sandy bird with pale ear-coverts and with white under the wing, very conspicuous in flight.

Family PRUNELLIDÆ. The Accentors.

Two sub-species of the Hedge-Sparrow are recognised, though for a time the B.O.U. Committee refused to accept the distinction, and though I am responsible for one of the three taken in England and pronounced Continental, I am not quite satisfied that the wing formula is a constant character. Dr. Riviere on October 27th, 1919, saw a few Hedge-Sparrows among many migrants which had come in on a strong northerly wind, and shot two; one had the wing formula of the Continental, the other of the British race. Exactly the same thing occurred when Col. Meinertzhagen obtained two very dark birds in South Uist in October, 1920. On the other hand, though the British form occurs in Orkney, no British birds have been discovered amongst those which have been examined at Fair Island, and the Continental bird has been taken at Muckle Flugga, the most northerly light in Shetland.

At any rate, Hedge-Sparrows of one form or the other move southward in autumn, passage being well marked at times; immigration occurs at the same season from northern Europe, and some birds, determined as British, emigrate from the South Coast. If the two sub-species are distinct, the British bird is resident and occasionally migratory, and the Continental a passage migrant, and perhaps a winter visitor.

The Alpine Accentor is an occasional wanderer rather than migrant to Britain. It had not descended from the High Pyrenees in September, where we found it, a large well-streaked, handsome bird, with white spotted throat and rufous flanks, but with all the characteristic actions of our Hedge-Sparrow. The bill at the base was reddish, not yellow, in all that we saw. The note was shrill, pitched higher than in our bird.

Family CINCLIDÆ. The Dippers.

British Dippers visit lower reaches of rivers, when upland streams are frozen or weather conditions make life in the usual haunts difficult. Perhaps similar hardships explain the visits of the Scandinavian Black-bellied Dipper, which has occurred many times in autumn. In Norfolk J. H. Gurney believed that it was the only Dipper in the county. It has been recorded for Shetland, where the British bird is unknown. A Manx Dipper, examined by Mr. H. F. Witherby, was typical of the Irish race.

Family TROGLODYTIDÆ. The Wrens.

The Wren, which has distinct insular forms in St. Kilda Shetland, and the Outer Hebrides, is migratory as well as sedentary; the birds which leave the South Coast in autumn and return in spring may be British bred or passage migrants from northern Europe. Emigration on the East Coast and passage down all coasts in autumn is noticeable from September to November, and return is observed in April and May.

The Shetland Wren, which we found not uncommon in all parts, from Unst to near Fitful Head, is distinctly darker and looks larger than our bird. It does not give many opportunities for lengthy examination, as it dodges in the stone walls and peat stacks on the hills and by the roadside, by no means shy but for ever busy insect-hunting, but certainly its bill looks longer

3 *Pl.* 32. A 136.

Cormorant feeding young. (pp. 159, 161, 278).

3 *Pl.* 33. Isabelline Wheatear. (pp. 134, 269). *A* 137.

than that of our familiar bird. Its voice, however, seems to have no distinctive dialect, though it is quite likely that a difference would be perceptible if the two forms were singing alongside.

Family HIRUNDINIDÆ. The Swallows.

In 1912, when many summer birds arrived early, a Swallow was seen daily in Cornwall from February 29th to March 10th, and another reached Cardigan Bay on March 2nd, but it was not until March 8th that any were seen in Cheshire, and very much later before the birds were generally distributed. Indeed, even when many March Swallows are seen, weather conditions may be unfavourable for the immigrants that follow, and in most years immigration is inconsiderable until the beginning of April, whilst wave after wave of birds comes in during May. Passage continues throughout May and even until late in June, some birds travelling past the Northern Isles, whilst many more cross the North Sea from various places on the East Coast. Swallows are largely day migrants, and continuous streams of passage birds, coming singly or in little parties but seldom in mass, may be watched all day, and often for several days in succession, at certain spots on the East Coast. West Coast passage is also considerable, but less continuous ; it has been suggested that many West Coast travellers are bound for the Færoes or Iceland, and not for Scandinavia, but this is mere conjecture. Towards the end of July parties of British Swallows move southward, and many leave in August, but passage in the north is not very noticeable until September. The date of departure varies greatly ; in some years but few birds remain until October, whilst in others there are some leaving up to the end of November. Birds seen in December and January may be wintering or have delayed departure.

The winter quarters of the Swallow, though only partly known, have been proved by ringing to extend far south, even

to the Cape. British Swallows have been recovered in France and Spain, but these may have been still on passage; but wintering birds, ringed in Britain, have been found in Cape Province, Orange Free State, East Griqualand, Natal, and the Transvaal, suggesting though not proving a route *viâ* the Mediterranean and Nile Valley, though one bird, ringed in Cardiff, was recovered at Luozi in Belgian Congo, very near the west coast of Africa.

The Sand-Martin is, as a rule, the first Swallow to be noticed, arriving in bulk towards the end of March; I have known it in Cheshire on March 15th and 16th, but as a rule it comes at the end of the month or early in April. Immigration continues throughout May. Whether the birds which coast with Swallows and House-Martins are bound for British nesting areas or are on passage is uncertain, though immigration in autumn on the more southerly portion of the East Coast is suspected, and passage movements are noticeable in most years. Birds from the north leave in July, and some emigrate in that month, and many in August. Major C. L. Williams tells me that in 1925 he saw numbers travelling east along the Sussex coast on July 21st and 24th. We saw very many passing down the French coast in early October.

The House-Martin does not, as a rule, reach us until the middle of April, although it has many times been recorded in March as a straggler; in 1912, a year which opened with great promise for early immigration, birds were noticed in Shropshire on April 1st, and Liverpool on the 4th, but as a rule April 10th or 11th are early dates for Cheshire. Passage continues until late in June, and towards the end of July many birds are moving south and in August emigration begins in most years. House-Martins, however, may usually be seen, even in northern English counties, in October, and there are records of departure in November, or of birds apparently attempting to remain for the winter.

A 138.

3 *Pl.* 34.

Gannet. (pp. 160, 278).

3 Pl. 35. Black-eared Wheatears. (pp. 134, 269). A 139.

The direction of flight of many migrants is puzzling, for apparently they may travel in the same direction in spring and in autumn. Thirty years ago Warde Fowler (14) drew attention to this phenomenon, for at Bordighera in April he saw an immense migration of Swallows, House-Martins, Swifts, and Alpine Swifts, passing quickly eastward. Near Hyères in September and October, 1925, I saw the largest passage I have ever seen of Swallows, Martins, and a few Swifts ; they were all flying very high and travelling steadily eastward ; prior to this we had been puzzled by the westward movements of these birds in the evening, until we discovered that the dense jungles of *Arundo donax* were their nightly roosts ; above these the birds gathered in immense numbers and performed marvellous aerial evolutions before they descended for the night. Warde Fowler's birds may have been travelling inland, having struck the Spanish or French coasts to the west, for there is every probability that direction of flight is varied according to weather conditions, though destination may ultimately be the same.

Dr. B. B. Riviere remarks that in spring the course followed by Swallows along the north coast of Norfolk is from east to west, which one would expect, but that so far as he can see the majority of these birds do not cross the Wash to Lincolnshire but turn south when they reach Hunstanton, and that this is the same course taken by immigrant winter visitors in autumn. He thinks that these birds follow this coastal route to inland winter quarters. On the other hand, when watching the continuous stream of Swallows and Martins which passed Scolt Head in the second week in May, 1925, when presumably the birds were passage migrants and not summer residents, the majority, so far as it was possible to follow the flight, went straight across the Wash towards the Lincolnshire coast, following the " hook " to its extreme westerly point and then making diagonally towards the opposite shore.

Major C. L. Williams has supplied me with most interesting notes of the passage in autumn of Swallows and other birds along the Sussex coast, and commented on the fact that these birds travelled in greatest numbers against easterly winds, and were not visible in numbers when the wind was westerly. On the face of it this seems to support the idea that birds like to travel against a wind, but there are other points to be considered. Are we sure that when the wind was westerly the birds did not take a more southerly course, when they would be drifted eastward towards their destination? They had started from somewhere west of his point of observation; he would not have seen them had they gone straight out to sea, but to do that with an easterly wind, even if light, was to court disaster.

Where Swallows may get to when carried out to sea is illustrated by the experience of my friend the Rev. Leyton Richards when crossing to America on the *Adriatic* in June, 1920. When about long. 30°, lat. 45°—roughly 900 miles west of Ireland, a Swallow came aboard, and then drank greedily from rain-water in the canvas of one of the boats. A moderate south-west gale was blowing, presumably cyclonic, so that we can guess that the bird had been blown out on the southerly portion of the system, where the winds would be east or south-east, but how it had sustained so prolonged a flight, and if it had rested on other boats we cannot say. Yet next day, 400 miles farther west, two domestic Pigeons took refuge, and were captured.

That Swallows do not all follow the same routes, if indeed they regularly follow routes, is shown by Mr. C. Suffern's notes (59) of the various places in the Mediterranean at which they were noted during the spring and autumn of 1917.

Lost Red-rumped Swallows have twice been known to visit our Islands in spring, having been killed at Fair Island and in Kent. The bird breeds in some Mediterranean countries.

In 1923 I saw at two different houses Swallows' nests built

upon electric lampshades, one in a porch, the other in a stable entrance.

House-Martins when on passage appear to notice the nesting sites used by other birds of the same species. There are two nests under the eaves above my windows, and in the autumn, after the young have left the nests, and apparently left the neighbourhood, passing parties of birds play round the house and fly up to the nests, occasionally clinging to the rims or even entering, for an hour or two at a time, and then pass on. The behaviour is very similar to that of the courting pairs in spring, before the nests are repaired, and suggests that amorous or social instincts are not latent in autumn. Spring courtship in the nests is common, two twittering birds entering, whilst a third, or even two or three, fly up to and swing down from the nest time after time.

Father E. Horne (60) gives a most interesting account of the manner of feeding young by Swallows which nested in a summer house. The nest had to be moved, and the lining and young birds were transferred to a box suspended by a string rather below the original site ; the birds were at first puzzled, visiting the remains of the nest and ignoring the young only six inches below, but at last they found and fed them. The box was gradually lowered, and the birds continued to feed the young, even when it rested on the ground, and later on Father Horne's knees. He was thus able to watch what happened, and found that the birds brought two, three, or four small bluebottles at a time, rapidly feeding each young one in turn. By some means, how was not clear, as each fly was passed to the young, its wings were nipped off, fell into the nest, and were not eaten.

Family PICIDÆ. The Woodpeckers.

The British Great and Lesser Spotted and the Green Woodpecker wander occasionally, but are hardly migratory, but the Northern Great Spotted is more or less regular as a winter visitor, and in some years is numerous. Few immigrant birds have been examined, but whenever those which were undoubtedly migrants have been seen by experts they have been this form; they have occurred from the Shetlands to Sussex, and in the Isle of Man and Ireland. The Wryneck, however, is a regular summer resident, reaching its southern haunts early in April and occasionally in March. It certainly is a passage migrant along the southerly portion of the East Coast, and there are indications that more careful observation might prove that it passes along both coasts, for it is known in the Northern Islands, and there are recent records in autumn from Holy Island, Northumberland, and Bardsey off the Welsh Coast. Autumn immigration south of Yorkshire, and emigration of summer residents and passage birds is most noticeable late in August and in September. In South France we met with migrant Wrynecks in strange places—one in a low tamarisk hedge by a frequented road, the other in moorland heather at over 1000 feet.

Family CUCULIDÆ. The Cuckoos.

One only of the four Cuckoos is a summer resident and regular passage migrant; it reaches us in many years at the end of March, but not in any numbers until towards the middle of April. Passage migration continues until June, birds passing up both coasts and reaching the Northern Isles. Before July ends some are on the move south, and in August many adult birds emigrate, but passage continues throughout September, and emigration, especially of the young, is noticed often in October.

3 W. 36

K 142.

Yellow-billed Cuckoo. (pp. 144, 272).

3 *Pl.* 37. *K* 143.

Gannet alighting. (pp 160, 278).

The date of the arrival of the first Cuckoo tickles the popular fancy, and the early records are not always reliable. A jotting that I came across aptly describes the position. The answer to the question "Where does the Cuckoo appear first?" was "In the newspapers." Nevertheless, the March Cuckoo can no longer be treated as a myth, and it certainly seems to visit us on the average at an earlier date than was formerly its habit. Indeed, the closer study of the migration of all birds has proved that early and late dates are less exceptional than was believed. Either a more general knowledge of and interest in birds are the explanation of this fact, or certain birds are extending their stay in our Islands. Probably each is in a measure true.

Although it is recognised as the rule that the mature Cuckoos leave before the young, this, like most rules, has exceptions. In many of the records from the lighthouses the age of the birds was not determined, but there are dates between July 19th and the end of that month for recognised young birds on passage in Scotland. Passage in Scotland, Northumberland, the Isle of Man, and Lancashire and departure from the Sussex coast have been noted in different years between July 12th and 20th, and birds have been seen in Fair Island and Orkney on return migration on July 26th. Often the Cuckoo migrates singly, and parties of eight or ten are exceptional; on September 6th I saw three young birds passing through Cheshire, keeping close together as they wandered south. Migrating birds rarely call, but at the end of September I saw a bird on passage and heard it call.

The actual winter destination of our Cuckoos is uncertain, for the bird occurs in Central Africa and southern Asia. Dr. H. Weigold (16) reports that a Cuckoo ringed in July, 1923, two days before it left a Redbreast's nest, was killed on September 1st on the island of Syra in the Ægean Sea; it had travelled in a south-easterly direction. He thinks that this

young bird, which in two months travelled so far in a different direction from that usually taken by Cuckoos that pass over Heligoland, was bound for Egypt. Heligoland Cuckoos travel north-east to south-west, but it is more than likely that Silesian birds will have different quarters in winter than those which come from the Baltic or Scandinavia. He adds that a bird ringed at the end of June in Konigswartha did not leave until the middle of August.

The Great Spotted Cuckoo (Plate 38) has occurred on five occasions, and three times the visits have been to the West coast of Ireland, and in spring; the two known occasions when it visited England were in autumn. All of these birds were not critically examined with regard to their age, but it is probable that all were immature. The British Isles are beyond the normal area of this African Cuckoo, but, as Mr. C. B. Moffat wrote, after examining the mummied remains of a bird picked up dead in March, 1918, near Cahersiveen in Kerry, it is conceivable that young, inexperienced birds, whether in their first autumn or on their spring migration, might join forces with birds of other species and so "take the wrong train." This Kerry bird, which was found within twenty miles of the Skelligs, where the bird occurred in 1897, was seen about, it is said, with another similar Cuckoo, and some eight Hoopoes, one of which was shot. It was from the taxidermist who mounted this Hoopoe, and kept a record of the date, that the erroneous statement that the Cuckoo was found in February was corrected; it was towards the end of March, when migrants are normally on the move. Doubtless the Cuckoo and Hoopoes had been wind-borne from the African coast, and carried, probably by a semicircular course, to the Irish shore.

Less easy to explain are the more than a dozen occurrences of the American Yellow-billed Cuckoo (Plate 36), and the one Irish record of the Black-billed Cuckoo from the same

3 *M.* 38. *K* 144.

Great Spotted Cuckoo. (pp. 144, 272).

3 *Pl.* 39.

Little Bitterns. (pp. 179, 180, 283).

K 145.

continent. Most of these were on the West Coast or in western localities, and as the former bird is known to be a straggler to Greenland, we can guess, but not prove, that it reached us by the northern route.

Mr. Edgar Chance's book and film, *The Cuckoo's Secret*, has been the bird's "publicity stunt." All its secrets are not yet elucidated; indeed, it is unwise to say that it always or never does this or that, so erratic and abnormal are many of its habits. "No two pairs of birds ever behave in exactly the same manner," is Mr. P. Bunyard's criticism. But the study of the bird's habits, and the controversy which followed, has had good results, widening our knowledge. Some birds certainly lay the egg direct in the nest, but we yet lack good evidence of how the egg is placed in a domed nest. Father E. Horne's observation (60), where he noticed a strange elongation of the body and the protrusion of a portion during oviposition, almost suggests that the bird may feel for the right spot like an ichneumon wasp with its ovipositor. But many remain unconvinced, and firmly believe that in certain cases the egg is laid on the ground, carried to the nest, and inserted by the Cuckoo's beak. This extensive study of the Cuckoo has produced other interesting facts—for instance, that two eggs are often in the same nest, that two young may be reared by one pair of foster parents, and that whatever is the ordinary number produced by one bird—we cannot call it a clutch—it is possible to cheat the bird into providing an excessive number for the collector's cabinet. At Tenby I saw one pair of Meadow-Pipits feeding a couple of young Cuckoos. I cannot of course say that the eggs had been in the same nest, for the Cuckoo appears to have such an alluring hunger call that it can induce others than its real foster parents to slave for it; but the incident provided a most remarkable study of variation. Beside the fact that two young Cuckoos are seldom seen so attended, was the marked difference in their plumages, one

being the grey phase, the other the reddish form ; that was not all, for one of the Pipits invariably fed the young from in front, whilst the other as regularly perched on the young bird's back, feeding it from behind, and thus avoiding the peevish peck with which the ungrateful bird usually rewards its fosterer's devotion.

Though the ways of the newly-hatched Cuckoo are well known, I learnt much from M. Burdet's wonderful series of films. The instinctive actions of the Cuckoo were deliberate and persistent, and appeared "intelligent" when it refused to cease its efforts until its fellow-nestlings were actually thrown from the rim of the nest ; it was not enough if they had been forced from the nestcup and lay, helpless, on the edge. In one film that he showed me, the young Cuckoo threw out all the young of a Redstart whilst the mother bird was brooding. Though obviously uneasy when the Cuckoo struggled beneath her, she was indifferent to the tragedy, even when her own nestlings fell beneath her eyes. M. Burdet has increased our knowledge of Cuckoo secrets.

Family MICROPODIDÆ. The Swifts.

The Swift is seldom numerous before the end of April, and the largest immigrations are in May. Early birds have been recorded repeatedly during the first fortnight of April, and there are one or two occurrences in March. Apparently the birds which nest further north do not as a rule linger in southern counties, for in North Wales, Cheshire, and Lancashire they often are in evidence before the end of April, and Dr. Eagle Clarke counts May 2nd as the average date for first arrival in Scotland. Strong northerly winds may delay progress ; I have seen immense crowds over Tring Reservoirs, Hertfordshire, on May 13th, and over a Cheshire mere a few days later ; in both cases rough cold winds delayed advance.

3 *N.* 40. *K* 146.

Red-breasted Merganser—female and young. (pp. 175, 282).

3 *Pl.* 41.

Needle-tailed Swift. (pp. 148, 272).

K 147.

Passage begins early in May and lasts well into June. At Scolt in 1924 the first Swifts passed on May 3rd, and for over a week steady passage continued except on two rough and stormy days. The birds never passed in flocks, but followed one another every few minutes or seconds ; 148 in half an hour, and 164 in twenty-five minutes were the result of two counts.

By mid-July Swifts are moving south, and many places are deserted early in August, though until the middle of September, and exceptionally later, passage parties will halt to feed in suitable places. When on the Irish Sea on July 29th between Anglesey and Barrow, a number of Swifts passed our boat, and I saw a visible instance of wind driftage, for the birds were evidently flying east across a southerly wind, which was carrying them north-east.

In 1918 Swifts were later than usual, and there were many noticed in September and October. One was seen near Glasgow on October 13th, and Mr. Alexander saw one in Kent, flying west against a westerly wind on October 21st, long after all local birds had departed. This observation of Swifts flying west is not the only one for Kent and Sussex, and seems to indicate that when the wind is westerly the birds select a place of departure from which they will be carried towards the coast of Brittany or perhaps the Peninsula. In the same year, on September 19th the late W. E. Ford saw large numbers of Swifts sheltering on the northern edge of a plantation on the Cheshire hills. They were obviously tired, for numbers alighted on the ground, from which they had considerable difficulty in rising. I have been often puzzled to know where migrant Swifts roost ; do they alight on the ground, or cling to some perpendicular surface of rock or masonry ?

Dr. H. Weigold (16), in his report on ringing, states that one pair of marked Swifts returned for four springs in succession to the same nesting site. In 1923 one ringed bird arrived with an unringed companion, but the following day the ringed

mate arrived, and the unringed bird passed on. From this he argues that the paired birds do not necessarily migrate together.

The Alpine Swift is a South European or North African bird which, on perhaps forty occasions, has been noted in our Islands, usually in spring or summer, but once in November; it has at least twice reached Scotland. Mr. H. M. Wallis shows (61) that in May, 1916, there was an incursion of these birds at Hythe, where three and six were found to have entered two bedrooms of a house one evening. The birds were flattened against the glass of open windows, and were not, as has happened in my house with the Common Swift, trapped between the panes of a sash window. This has been my experience on three occasions, twice with adult birds, and always in the same room; why the birds creep between the panes I cannot understand, but it was in the morning that I discovered them.

The Needle-tailed Swift (Plate 41) is an accidental wanderer from eastern Siberia which has been taken, in July on both occasions, in Essex and Hampshire.

Mr. J. K. Nash tells (62) that by visiting the roosts after dark he found that some Swifts, at any rate, come down before morning from their high crepuscular flight; he also discovered that they could fly in the dark, and that they scuttled over the boards under the roof with ease. He suggests that the explanation of the flight is that insects ascend to make the most of the light and that the Swifts follow to feed, but my impression of the evening performance is that it is aerial exercise or enjoyment.

Family CAPRIMULGIDÆ. The Nightjars.

The Nightjar is a late immigrant, arriving at the end of April or early in May, and seldom reaching the northern English

counties before the second week of the later month ; the bird has been recorded as early as the 4th and 6th of April, but such dates are unusual. Although Nightjars continue to arrive until June, there is little suggestion of passage beyond our Islands. Towards the end of August the bird is missed from many of its haunts, but records from the lighthouses prove that now and again some remain until October. There is one date, October 7th, from the Morecambe Bay Lightship (Lancashire), and another on October 9th, from the Isle of May, much further north, and on the Devon coast one was noted on November 13th.

The Egyptian Nightjar (Plate 42), which has also been recorded from Heligoland, and the Algerian Red-necked Nightjar (Plate 45) have wandered so far as England, though only single examples of each have been obtained.

Family MEROPIDÆ. The Bee-eaters.

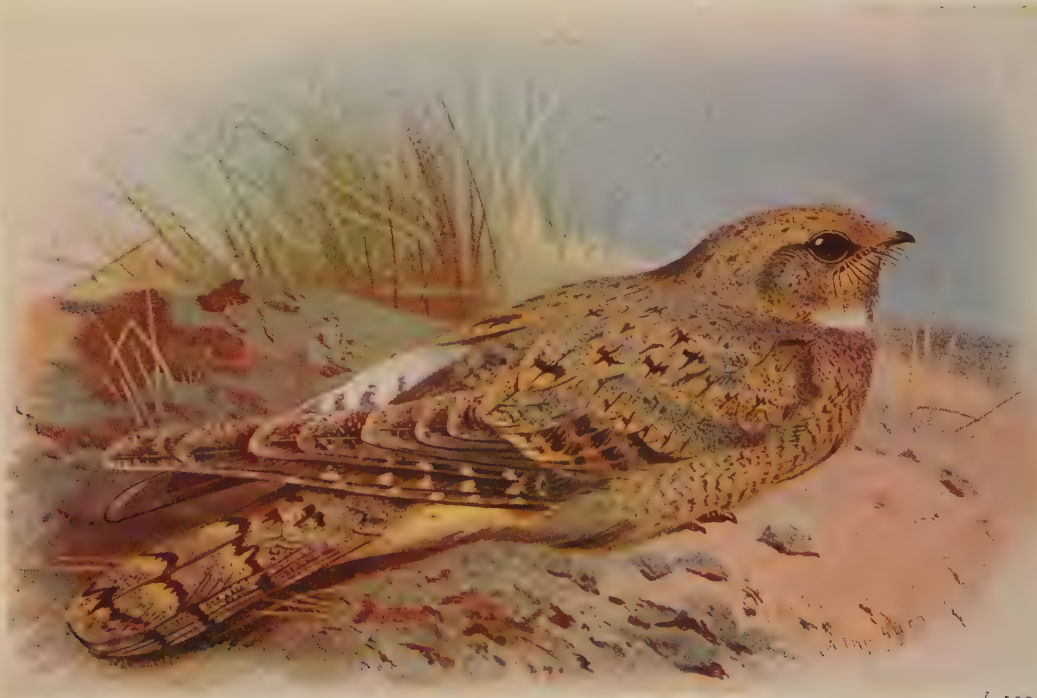
The Practical Handbook classes the Bee-eater as a " vagrant," and Dr. Eagle Clarke does not appear to mention it in his *Studies of Bird Migration*. Harting, however, describes it better as " an irregular summer migrant." In Series I. I said that " some of the spring wanderers might remain to nest with us if they were unmolested." In June, 1920, a pair made an unfortunately abortive attempt. Messrs. J. K. Nash and D. Hamilton (63) were the two who were lucky enough to see the birds near Edinburgh, and day by day they watched them, until they found that they were entering and excavating a hole. The pair would sit on a fence side by side in full view of a footpath, but they sat " very close down," presenting a small front, and their green under parts harmonised with the surrounding foliage ; now and again they took high undulating courtship flights, and were often seen capturing bees on the wing, which they beat into inactivity on the rail

before they were swallowed. One day the male was discovered alone, and the observers hoped that the hen was sitting, but found later that she had been caught by a gardener, who tried to feed her on bread crumbs, with fatal results in a couple of days. The corpse is now in the Royal Scottish Museum, but the relict male was caught and devoured by a cat. In most of the many cases when the bird has been recorded—usually as a "specimen"—more than one bird has been seen, and it is interesting to note that one was recorded, on August 23rd of the same year, from Lentran on Beauly Firth. Most of the occurrences have been in spring, and one can hardly doubt that the birds are, like the Hoopoe and Golden Oriole, attempting to include the British Isles within their breeding range. It is therefore most important that their destruction should be checked, by private effort as well as legislation, for the obituary notices mount already to over seventy, and there is no doubt that many of these most attractive birds have perished unrecorded.

Mr. H. F. Witherby (65) describes the nestling Bee-eater, two or three days old, as having rather bright pink-flesh skin and no down, a straight grey bill, and inconspicuous dull yellowish gape flanges.

Family UPUPIDÆ. The Hoopoe.

The Hoopoe has a wider range than the Bee-eater, and is a regular summer visitor, a summer resident when permitted, and a passage migrant. Indeed, birds have been recorded in winter; even in Cheshire one frequented a garden in December and January, 1910–11. Attempts at nesting, whether successful or not is another matter, have been in southern counties, but as a passage bird, mainly in April and May, and from August to October, it is well known in Ireland, and has occurred many times in Scotland and the Northern Isles.



3 P. 42. Egyptian Nightjar. (pp. 149, 272). L. 150.

3 *Pl.* 43. **Redshank on open nest.** (pp. 196, 288). *L* 151.

The nestling Hoopoe, with feathers beginning to grow, is described by Mr. H. F. Witherby (65) as having scanty but long white down, a rather thick, straight, bluish-slate bill, and conspicuous waxy-white gape flanges.

Family ALCEDINIDÆ. The Kingfishers.

The migrations of the Kingfisher seem to be nothing more than wanderings in search of food, for many leave the streams after the nesting season to feed along the shore. The habit of frequenting the coast may explain the occurrence at lights and not be due to passage migration.

My statement that fresh-water shrimps, which form part of the food of the Kingfisher, are "destructive to ova" was questioned by the Editor of *The Fishing Gazette*, who asked my source of information, which was from an experienced trout-hatcher and a very definite statement by Francis Day in his *British Fishes*. As, however, I had felt doubtful, I tried control experiments, putting the crustaceans in vessels with living and dead eggs; the living eggs were untouched, the opaque dead eggs devoured. The contention that gammarids are useful in hatcheries may have foundation, and I withdraw that portion of my remarks, but not the appeal to the anglers to spare their rival.

The discovery of a specimen of the Belted Kingfisher *Ceryle alcyon* (L.), an American bird whose reputed occurrence in Ireland has been doubted (Series I., p. 365), that is stated to have been shot in Cornwall in November, 1908, revived the question as to the possibility of the bird having reached us unaided. The Rev. F. C. R. Jourdain (66) points out, that though it was rejected by Saunders, and by Ussher, who suspected fraud with regard to the two Irish examples, the bird has occurred in Iceland, the Azores, and Holland. It may have reached us in the same manner as other American birds. At

present, however, it is rejected by the B.O.U. Committee, and the Editors of the *Practical Handbook*.

Family CORACIIDÆ. The Roller.

The Roller is a rare passage migrant between its breeding quarters in Europe, where it nests as far north in Scandinavia as the latitude of Shetland, and tropical Africa. Most of the occurrences, which number considerably over a hundred, have been in southern and eastern counties, the birds apparently crossing the North Sea from the East Coast and but seldom from the Northern Isles; yet it is a straggler to the far north, and has even been recorded from the Færoes. It occurs on both passages.

Families TYTONIDÆ and STRIGIDÆ. The Owls.

The status of the Owls is varied. The White-breasted Barn-Owl and the Tawny Owl are sedentary, but the Dark-breasted Barn-Owl is an occasional visitor in autumn and winter rather than a regular migrant from Western Europe; it has been recognised in eastern and south-eastern counties and once in Shetland. The Little Owl (Plate 28), now resident, is rapidly colonising, and has reached Lancashire, Cumberland, Northumberland and the West of England and Wales, and has been reported from Scotland. The Long-eared Owl, though best known as a resident, is also an East Coast migrant in autumn and more rarely in spring; I have notes which suggest autumn movements on the West Coast. The Short-eared Owl, though it nests annually in many places, is better known as an autumn immigrant, with some suggestion of regular passage migration on the East Coast.

The Snowy Owl, an Arctic bird, is a regular winter visitor to the Shetlands, and occurs farther south. It has reached Devon and the Scilly Islands. Scops-Owl and Tengmalm's

3 *N.* 44. Red-necked Phalarope. (pp. 188, 285). *L* 152.

3 *Pl.* 45. **Red-necked Nightjar.** (pp. 149, 272). *L* 153.

Owl, the former from central or southern Europe, and the latter from farther north, are rare wanderers rather than migrants, which have been met with in many places between the South Coast and Shetland ; Scops has occurred in Ireland. The Hawk-Owls, one from northern Europe and the other from America (Plate 46), have each been recorded three or four times. The Eagle-Owl, with a wide European range, is an occasional visitor.

Experience in October, 1920 and 1922, and in May, 1925, leads me to uphold Jardine's statement that the Barn-Owl does sometimes hoot. It was a short *too-ee*, and a long moaning *ooo-ooo-ooo*, quite distinct from the *tu-whit* of the Tawny, or the musical hoot of that bird. Mr. Stanley Morris (67) refers to the shorter sound as " a parrot-like whistle, with an upward inflection," and likens the hoot to " derisive laughter, uttered in gradual cadence on the note of B or B flat."

Mr. R. H. Brown (68) records the Tawny Owl feeding young in August, and in September, 1925, there were young birds just out of the nest near Manchester. On October 29th, 1925, the late R. E. Branthwaite saw an angry Tawny Owl emerge from a burrow near Whaley Bridge, Cheshire ; it threatened his dog, and it is possible that young birds were in the burrow, for three had been seen in the trees a few days before. The bird is said to be single brooded, but these late broods suggest a second laying.

A Long-eared Owl, sitting eggs and young in Texel, refused to leave even when M. Burdet, on two occasions, gently raised her to see the progress of the brood. She hissed once, but never struck at his hand. The cere is greenish, and in the Barn-Owl pinkish-orange, the bill of the latter being tinged with pink. The shade of white of the bill appears to vary, and was very white in two birds that I had in captivity.

In May, 1922, a Snowy Owl remained for some time in the

neighbourhood of Horsey, Norfolk, and was last seen by Dr. S. H. Long (69) on the 13th, and one, perhaps the same bird, halted at Holy Island, Northumberland (70), and left, travelling north, on May 20th. Some pellets of this bird, which I examined a month later, were entirely composed of broken rabbit bones and fur, on which the larvæ of a rather uncommon *Tinea* moth were feeding.

The black patch and dark pattern on the underside of the wing of the Short-eared Owl is very distinct in flight ; I noticed this in birds on the dunes at Scolt in May, on a male which flew over glaring but making no sound or threat, when we were near his sitting mate, and on one hunting by day in Holland.

The call of Scops-Owl, which I heard in the south of France, was a monotonous and rather mournful *rroo, rroo ;* the flight of the bird struck me as distinctly heavier than that of the Little Owl, which was also garrulous after dusk. The latest recorded visit of Scops was at Blakeney, Norfolk, on October 6th, 1922, and the bird arrived on a north-east wind.

Family VULTURIDÆ. The Vultures.

The Griffon (Plate 49) and Egyptian Vultures (Plate 122) have, on two or three occasions, wandered to Britain, probably from Spain, where they abound. We saw both species, four or six at once, soaring above the Pyrenean peaks and valleys, splendid birds on the wing. The Egyptian, when mature, is easy to recognize by its white, black-bordered pattern. The Griffon is much larger and greyer : its head, befrilled in white, looks quite small in the angle of the wide wings, held well forward. In both the primaries are widely separated in flight, and bend up towards the tip. The tail of the Egyptian, seen against the sky, is short and pointed ; that of the Griffon square and often widespread. We saw one bird flying with legs drooped, after the manner of a Harrier.

3 *Pl.* 46.

American Hawk-Owl. (pp. 153, 274).

L 154.

3 *P.* 47. Turnstone on nest. (pp. 208, 291). *L* 155.

Family FALCONIDÆ. The Harriers.

Montagu's is the most regular migrant of the three Harriers ; it is a summer resident in its sadly restricted breeding haunts, arriving as a rule about the middle of April, though I have seen immature birds on passage in the middle of May ; it leaves in October or, rarely, November. Both the Marsh- and Hen-Harriers nest in a few spots, the former occasionally in England, the latter in Scottish Islands, but they are better known as wanderers on passage in autumn and winter.

The winter visits of the Hen-Harrier are sometimes lengthy if the bird is undisturbed ; on the Lancashire coast birds, or probably one bird, appeared for three years in succession. In 1920 it was seen on August 29th and was about until December 18th, but in 1921 it arrived on July 31st and was about until January 29th, 1922. One was seen so early as July 10th in 1923.

Montagu's Harrier is at times colonial in nesting ; in Holland we saw three nests in a small area.

Montagu's shares with the Marsh the trick of hanging its legs when quartering the ground ; its flight is then wavering and owl-like. Several Marsh-Harriers which I saw in the Camargue were thus hunting with hanging legs, and this was particularly noticeable in a very creamy-headed young male which was actually not many yards away. In Norfolk I watched the courtship flight of Montagu's Harrier, the male repeatedly stooping at the female, who dodged his playful assaults with petulant mews. Later, when the female was brooding young, I saw the male bring her food ; she rose to meet him, and when he was about ten feet above the nest, half reversed and with one foot took the food from his foot, dropping at once to break it up for the nestlings. These young birds (Plate 31) were sparsely clothed in down, thickest on the head ; on the body

the pink flesh showed through the down covering. There was a dark rim round the very dark eye, much darker than in the adult bird. The bill was blue-black, the cere pale yellow like the legs, and when they opened their mouths to expostulate the insides were very pink.

When Captain Knight (71) saw the transfer, the food was dropped by the male and caught by the female; but Miss E. L. Turner confirms, from her extensive experience of the bird, that as a rule the transfer is from claw to claw.

The Buzzards and Eagles.

The Rough-legged Buzzard is a winter visitor rather than passage migrant, not infrequent on the East Coast, and more rarely elsewhere; the Common Buzzard, though sedentary in hilly country, is a passage migrant on the East Coast and rarer in the West; apparently, as with the Eagles, most of these wanderers are immature birds. The Steppe Buzzard is included on the strength of one identified wanderer from the East. Young White-tailed Eagles pass through England occasionally, and very rarely Golden Eagles, mostly immature, are met with, but the latter bird is not a regular migrant. The Spotted Eagle (Plate 2) is a rare straggler from Eastern Europe or Asia.

Although the irides of the adult Buzzard are dark brown, Miss M. Garnett tells me that in all young birds that she has examined they have been light brown or hazel.

Towards the close of 1920 an immature White-tailed Eagle frequented a valley on the Derbyshire-Yorkshire border, where I saw it at close quarters on January 15th, 1921. It was a very dark chocolate bird with a mere suspicion of white at the base of the tail; its wing-beats were steady and strong, but did not appear to lift the body above the plane of flight. It flew straight, its head carried low and well forward, but occasionally careened and banked smartly. It was mobbed by several Hooded

Crows and when it dropped its feet to threaten one of its assailants, we saw that the tarsus was unfeathered and that the legs were yellow. Its bill looked very dark—not yellow—and Mr. C. H. Wells, who examined it after it had been shot by a keeper, says that it was dark horn, the cere being dull yellow. In the Pyrenees the Golden Eagle is sociable; twice we saw five circling and playing together on the wing.

Hawks, Kites, and Honey-Buzzard.

The Honey-Buzzard is a regular but uncommon passage migrant, and as it used to nest in the south of England it is probable that if the spring immigrants were unmolested, some might again remain as summer residents. The Sparrow-Hawk, best known as a resident, is also a winter visitor and passage migrant.

Dr. H. Weigold's (16) account of the passage at Heligoland on September 6th, 1923, of a "great flight of young Sparrow-Hawks, mostly males," is specially interesting, for the birds did not come in a flock but singly, following one another flying low over the dunes. Many were shot or captured in the snare nets, and amongst them was a young Goshawk.

Most of the European Goshawks, which have visited us from time to time, though not as regular migrants, have been immature wanderers, but two out of the four American Goshawks were adult. The Red Kite is a rare straggler on migration, and as it has been seen in Wales at some distance from its restricted breeding area, it is probable that it wanders after the nesting season. Twice, at any rate, the Black Kite (Plate 1, Front) has visited Britain.

Mr. J. H. Owen (72) tells that out of twenty-six nests of the Sparrow-Hawk examined in one year, seventeen were entirely new and the others built on their own old nests or on those of other birds; one was on a squirrel drey. He remarks that

"there has always been some noticeable difference in the behaviour of all hen and cock Sparrow-Hawks" which he has watched closely. Miss M. Garnett points out that the blue bill, in this bird and the Kestrel, is black at the tip.

In France I was much struck with the dash and speed of a Goshawk which we saw chasing a Short-toed Lark; it followed every turn of the fugitive. The Honey-Buzzard is a variable bird, but in the Pyrenees we recognized it in flight by broad dark bands on its light brown tail, and bands across the primaries near their splayed-out tips.

The Falcons and Osprey.

The Hobby is the only Falcon which is purely a summer resident; it arrives late in April, and seldom remains in England after September. The Kestrel, Merlin, and Peregrine, all three resident, are also winter visitors or passage migrants; the passage of the first two lasts practically all autumn, and in spring birds arrive in March and are sometimes passing in June. The Merlin and Peregrine will travel with flocks of other birds, taking toll from their fellow-travellers; they follow a moving food-base. Twice, at any rate, the American Peregrine has visited us.

The Lesser Kestrel (Plate 50) is a rare wanderer from Southern Europe, and the Red-footed Falcon an occasional visitor on passage between its breeding quarters in North Europe and Africa. Three of the Gyr-Falcons are occasional visitors from the North; the Greenland bird is the most frequent; the Iceland Falcon usually winters in Iceland, and the Gyr-Falcon of North Europe is the rarest of the three.

The Osprey, no longer a resident, is a rare but regular passage migrant, which occasionally—if permitted—stops for considerable periods in places where food is plentiful. In 1920 one

3 *W.* 48. *L.* 158.

Nest of Grey Plover. (pp. 204, 290).

3 *Pl.* 49.

Griffon-Vulture. (pp. 154, 275).

L 159.

frequented a retired Cheshire mere from the middle of July until September 17th. In August I watched this bird fishing ; it carried a large fish, I could not see what but guessed it weighed a couple of pounds, holding it with both feet, one in front of the other, the head of the fish pointed in the direction of flight. When this bird perched, very upright, its breast seemed to be puffed out like that of a Pouter Pigeon. In play it swooped at and scared a Heron.

A Kestrel which had been shot when attacking Wood-Pigeons was brought to me ; it had been seen to strike down a Lapwing. Kestrels will mob a Raven or a Magpie in anger and not with any idea of food ; but Dr. C. Cairnie told me that he saw one chasing a screaming Green Woodpecker as if it wished to kill it. In France I watched the Lesser Kestrel feeding, but though it dropped again and again for grasshoppers or other insects in the grass, I did not see it take any on the wing, after the manner of the Hobby. Another male showed a large blue-grey patch on the wings when hovering, an even better identification mark than the unspotted back.

Families PHALACROCORACIDÆ and SULIDÆ. Cormorants and Gannet.

Although most Cormorants and some Shags travel south in autumn, their movements are irregular, and many birds remain all winter near their nesting quarters or in some sheltered estuary or bay. Thus ringed birds have been recovered in winter at no great distance from where they were marked as nestlings, whilst others, in their first autumn, have been reported from France, Spain, and Portugal. Birds ringed on the Farnes have been found on the West Coast, but whether they travelled overland or coastwise is not known ; again, birds ringed in Ireland have travelled north and been recovered

in Scotland, and others have been seen moving south with every indication of normal migration. Whether there is a regular overland passage towards the south is uncertain, for the Cormorant, much more frequently than the Shag, visits inland waters, often remaining for many weeks if fish are abundant. In Lancashire, Cheshire, and Derbyshire I have notes of birds on inland waters in every month except June and July, and doubtless immature birds may at times be met with in summer. Most of the visits are from August to November, suggesting slow southward passage. Two birds, which varied their fishing quarters between a large mere and a pool in a disused brickfield, spent much time perched on the summit of a lofty spire, two and a half miles from the mere, or on a tall chimney in the brickfield. They were certainly about for ten or twelve weeks, and probably more. A visitor to another mere roosted nightly *in* a shed in Brunner, Mond's works, retiring regularly at dusk.

The movements of the Gannet are more regular, and as it is pelagic during the greater part of the year it is seldom seen in winter near its breeding stations. The majority travel south in autumn, keeping well off shore, but from the numbers which are recorded as casualties at inland localities, for the bird does not visit fresh water for food, it is probable that many take a deliberate overland route, and are not necessarily storm-drifted when seen inland. Many of these inland Gannets are exhausted birds of the year. Mr. D. G. Garnett, when cruising in the Channel and Atlantic off the St. George's Channel in autumn, found that most Gannets were travelling west or south. Ringed birds have been recovered in France and Portugal. The most unusual result of ringing Gannets was the recovery of a bird near Romsdal, Norway, in January, 1917—where it was fishing with others—which had been ringed on the Bass four years before; Romsdal is some 500 miles north of the breeding station.

3 *W.* 50.

Lesser Kestrel. (pp. 158, 278).

L. 160.

3 *Pl.* 51. *L* 161.

Black-winged Stilt. (pp. 202, 289).

I have seen birds travelling steadily northward at the end of April and May on both coasts, but have a record of return to Scottish breeding haunts so early as January. In August and September the birds pass the Welsh coasts in large numbers, and in September and October we found them in numbers in the Bay of Biscay.

Dr. Heatherley's photograph (Plate 32) illustrates the manner in which the young Cormorants are fed, as described in Series I., p. 351.

In the British Isles the Gannet is an increasing species. In 1925 I visited Hermaness, Shetland, and saw very many on the stacks near Muckle Flugga, where Edwardson first saw birds in 1919, and where the following year Mr. Meade-Waldo (73) estimated that the colony numbered some hundred pairs.

At Noss, where they were first noticed in 1915, there were about ten pairs in 1920, but though I did not count in 1925 it was evident that the numbers have increased enormously since then. On July 7th, when there were young in white down at the old spot, a number of birds were starting a fresh location near the top of the cliff, and were still nest-building and courting. The amorous birds indulged in a great deal of bowing, and one, which I took to be a male, frequently half opened its wings, crouched slightly, and deliberately wagged its head under one wing. This may have been a coy invitation from the hen, for Mr. R. Chislett thought that in Cormorants, most if not all the amatory neck-swinging was performed by the females, though I feel sure that I have seen reciprocal gestures. Though this courtship was sometimes rough, and when birds clashed their heavy bills together there was a very decided crack, I did not see any of the bill-wrestling which Mr. Kirkman watched.

The late birds had dislodged the Kittiwakes and Guillemots from the ledges which they intended to occupy, and some had

piled up masses of weed, which they jealously guarded, threatening rivals with open mouth much as depicted by Mr. Atkinson (Plate 34). His other picture (Plate 37) shows the bird alighting, a most extraordinary performance, for the speed and power of the heavy birds is so great that one expects disaster. Col. Madoc received a Gannet which had been killed by striking the mast of a steamer. Mr. Bertram Lloyd points out (*British Birds*, xix. 309) that the Gannet sometimes lays two eggs. When he and Mr. C. Oldham visited Grassholm on July 21st, 1925, they were surprised to find four nests containing two eggs each, and many with two young birds.

The flight of the Gannet varies according to its intentions. Thus when on migration, travelling from the nesting site to fishing quarters, or returning with food for the young, the birds fly low, with regular steady wing-beats, and often numbers will travel in a string, one behind the other; I have seen these strings, sometimes of thirty or more birds, hurrying from or returning to Ailsa Craig, when many miles away from the mouth of the Clyde. When fishing, however, the flight is more leisurely; the birds will take two or three powerful strokes, then bank smartly, turn and swing down again towards the water, or they will float at a height, adjusting their wings to suit wind direction. When a strong north wind was blowing I watched a number feeding in a Shetland tide-race. They beat up against the wind, rising quickly; then, when they sighted prey, turned with wide-spread, motionless wings, and dived diagonally under full sail, thus tacking into the wind, closing their wings only when they were close to the waves. But it is evident that the manner of flight and of diving depends upon the direction and force of the wind, and the destination of the birds. When on a trawler I have several times seen Gannets, usually young birds, alight on the water to compete with the Gulls for the entrails and damaged fish which had been thrown overboard after a haul.

3 *W.* 52. *L* 162.

Richardson's Skua, dark phase. (pp. 224, 284)

3 *Pl.* 53. **Red-breasted Goose.** (pp 164 279). *L* 163.

In November, 1923, a Gannet in its first mottled plumage fell near my house. When approached it opened its mouth, repeating a loud and rather shrill *uk*, *uk*, *uk*, and bit savagely. When placed in my bath it refused to dive, and tried to get out of the water, using its bill as an additional "hand"; indeed, when it wished to rise when squatting, it usually helped itself up with the tip of its bill. Its irides were pearl-blue, with a bluer rim round the pupil; the bill was brownish horn, and the skin round the eye dark slate, and not brown as described in the *Handbook*; the feet and tarsi were very dark grey. I gave it to Mrs. A. W. Boyd, who kept it alive for just over six months, when it died suddenly when in apparent good health. It showed little inclination to fly, nor did it care to swim on a pond, but became quite tame. In October, 1925, Mrs. Boyd received another immature Gannet which had fallen in Cheshire, but this bird at once swam with her ducks, and evidently flew when it felt strong enough to continue its journey, for it was gone one morning.

Family ANATIDÆ. The Geese.

With the exception of a few Grey Lags, which nest in the north of Scotland and the Hebrides, all our Geese are winter visitors, and although several species migrate so far south as the Mediterranean, there is little evidence that any are regular passage migrants on our shores. Reports of passing Geese are seldom satisfactory, especially those from the lighthouses; the birds are described as "Grey Geese," but even when species are mentioned there is no proof of correct identification. Most Grey Geese arrive from about the middle of September onwards, and leave again in March or April. Although northern and mainly Arctic breeders, they are not common in the Orkneys and Shetlands, and as winterers frequent certain good food-bases and wander little from these spots. Occasionally "Grey

Geese" are reported as passing in July—July 3rd in Cumberland, and 6th on the Lancashire coast—and there are many instances of arrival in August; late departure, especially of Pink-footed and White-fronted Geese, is not unusual in May. The Siberian Lesser White-fronted Goose has been once identified satisfactorily, and there are a few records of the Red-breasted Goose (Plate 53) from northern Asia.

The Snow-Goose is a rare wanderer from Arctic Asia or America, and the Greater Snow-Goose, which nests so near as Greenland, has now been identified on three occasions; but as I have found Bewick's Swans described as "White Geese," every report of Snow-Geese should be treated with caution. The Brent and Barnacle arrive and leave about the same time as the Grey Geese, often remaining until May.

In 1922 a male Canada Goose mated with a female Grey Lag at Holkham, and the mother, a wild bird, remained behind when other Grey Lags left and reared five young. The hybrids threw in their lot with the Canadas, and in the spring of 1924 both they and the old bird remained. The hybrids had Barnacle rather than Grey characters.

J. H. Gurney (74) described the attitude of a Pink-footed Goose when incubating; she lay with neck outstretched with "quite a reptilian appearance." This attitude, an aid to concealment, is shared by some other long-necked birds.

The Swans and Sheld-Ducks.

The two Wild Swans are winter visitors, sometimes arriving in October, but as a rule much later, and returning north about April, but the dates are irregular. The Whooper has nested in Scotland, and may do so more frequently than is imagined; since the discovery of the nesting in Perthshire in 1918, Mrs. S. Gordon (75) photographed the bird at the nest in the West

Highlands, in 1921. There is no evidence that the Mute Swan migrates.

Since 1921 the visits of Bewick's Swan have not only been more regular, but the bird has appeared in some numbers further south than usual ; indeed, some herds of thirty or forty birds have been seen. In the winter of 1921–22 the first were recorded towards the end of October, and the last seen going north at the very end of April, but some visits have been later and departure earlier. Examination of the numerous records, including my own observations of this Swan, show that in England and Wales the occurrence in October and November is not infrequent.

The Common Sheld-Duck is both resident and migratory ; many winter visitors arrive in autumn, and at the same season some home-bred birds emigrate. The uncertainy of these movements is indicated by the fact that out of a brood of young birds ringed in Hampshire in July, 1912, one was recovered in Cornwall in the following February, and another in Schleswig-Holstein in August, 1913, whilst a third was found in Germany in August, 1917. Other recoveries show that many remain near the place where they were hatched. The Ruddy Sheld-Duck is an irregular wanderer from southern Europe or further east, but it is so frequently kept on private waters that its occurrence does not prove immigration.

Bewick's Swan looks cobby and short-necked ; it shares with the Whooper the habit of carrying its neck stiffly upright, but when at rest curves it gracefully. Young Mute Swans, especially when alert and preparing to take wing, stiffen their necks and may be mistaken for wild birds. After watching a number of Bewick's Swans at close quarters I find that the length and breadth of the line down the culmen varies greatly, especially in young birds, and the depth of colour and shape of the yellow patch is also variable.

In April, 1924, a herd of ten Bewick's Swans visited a Cheshire mere on their northward journey, and one young bird failed to leave with them. I examined this young Swan within a very few minutes of its death, and a pathologist kindly conducted a P.M., and found that it had died from tuberculosis and pneumonia. Immediately behind the nostrils the skin was lake-red, and the patch, straw-coloured, was tinged with fleshy-pink. The feet were leaden-grey, the irides dark hazel, and there was a chrome-yellow rim round the eye.

On the wing Bewick's Swan, in addition to looking smaller, appears to have a shorter neck in proportion than either the Whooper or Mute; indeed, it is often mistaken for a Goose, and some birds recorded as Snow-Geese may have been Swans. The wing-beats are somewhat hurried, and the swishing sound produced is quite different from the throbbing beat of the Mute, which, when heard at close quarters, has also a creaking effect.

A male Mute Swan on a Cumberland lake lost his mate, but in the following year repaired the old nest on an island and guarded it tenaciously. When I visited the island he "busked" round the boat, and when I landed to examine the nest, on which he brooded regularly, he also landed and struck at me with his wing. I found that he had been brooding on two flat bits of rock.

The late Dr. Wiglesworth (76) found large numbers of Sheld-Duck nesting on Steep Holm in the Bristol Channel, and using communal nests, so many as four or five birds laying in a single nest. Many of these nests were not in burrows, but under rocks or bramble bushes. Communal laying may perhaps explain the large broods of young birds which are so often seen with one pair of mature birds in attendance.

On the Norfolk coast I had opportunity of watching courting and nesting Sheld-Ducks, and constantly saw three or four birds wandering over the dunes house-hunting (Plate 54). When a duck left a burrow she almost invariably walked for

3 *Y.* 54. *M* 166.

Sheld-ducks house hunting. (pp. 166, 279).

3 *Pl.* 55.

American Wigeon. (pp. 169, 280).

M 167.

some distance before taking flight. I was assured by the natives that footprints in the mouths of the burrows did not mean occupied nests, as the incubating bird flew straight in and out ; this, however, is certainly not always the case. There was a distinct sexual difference between the courtship gestures ; the drake raised his head, straightening his neck, and then brought it down with a deliberate and courtly bow, curving his neck gracefully until his bill pointed towards the ground. The duck, on the other hand, lowered her head, curving the neck upwards with the bill slightly upraised, then lifted her head without straightening the curve. This was so often performed without variation that the action appeared to be a request on the one hand and a response on the other.

The Surface-feeding Ducks.

The movements of most Surface-feeding Ducks are complicated by the fact that many nest in our Islands, some in large numbers, and although there is evidence from observation on or near the coast, it is difficult to say if birds seen in autumn or winter are immigrants, passage migrants or home-bred birds seeking food. Mallards arrive from the north early in September, and many wintering birds leave in March, but it is affirmed that those on passage are noted until May. It is true that the waters of Cheshire and Staffordshire show a marked increase in their Mallard population in mid-September, and a diminution in March, and I have seen birds moving on the coast much later. British-bred Mallards have been recovered in France, Germany, Denmark, and Sweden, whilst birds trapped and ringed in winter in Scotland have been taken in summer in various countries to the north-east, showing, as Mr. Witherby (77) points out, a general south-west course in autumn. This is supported by the recovery of birds marked in Baltic countries. There is, as shown by Dr. A. L.

Thomson (9), special interest in the British birds recovered north of our Islands, for they were found in summer and one was reported as breeding. This is contrary to the accepted rule that birds return to the place of origin, and Dr. Thomson suggests that they consorted with foreign birds and departed with them in spring. Though he says that his conclusions are merely from "indications," he believes that most of our British Mallards are sedentary, and coins for these unusual performances the word "abmigration"; it is a northward departure in spring from normal breeding haunts. Although it is unusual, perhaps abnormal, may it not be that the birds are seeking fresh quarters, just as many species—Grebes, Turtle-Doves, Woodpeckers, for example—are steadily spreading northward in our Islands? I should call it variation in habits rather than abnormal behaviour.

Immigrant Teal reach us a little earlier than most of the oversea Mallards; increase is noticeable in August. The ringing of Teal bred in Great Britain suggested regular autumn passage to Ireland, but one Cumberland bird was found, two autumns later, in Norway. Three hand-reared birds marked on the Solway in 1923 were recovered in the following autumn in Denmark, the north of Sweden, and near Manchester. It is worth noting that though the majority of both British Mallards and Teal were recovered near home, most of these young birds were hand-reared. Is it not likely that the effect of hand-rearing would be to encourage a sedentary habit? Teal marked in Russia and Finland have been found in Italy.

The Wigeon (Plate 56) arrives from August onward and leaves in March or even May, but whether birds seen are wintering or passing is hard to guess. Mr. F. W. Holder noted very marked passage movements of Mallard, Teal, and Wigeon on the Lancashire coast as early as February 2nd, and on the 23rd he watched Wigeon passing, flock after flock, coming from the south-west (? the Welsh coast), and estimated

3 *Pl.* 56. *M* 168.

Wigeon. (pp. 168, 280).

3 *Pl.* 57. *M* 169.

Blue-winged Teal. (pp. 169, 280).

at least 2000 birds. In Cheshire Wigeon decrease in March, but odd birds remain until June 13th. Ringing of Scottish young birds indicates a general southward movement, but variation in direction; thus two birds out of one brood were recovered respectively in Holland in the first autumn and in Nottingham two winters later. A German ringed Wigeon was killed in Ireland in winter, but the most interesting recovery is of a bird caught when mature and ringed in Warwick, which was reported from Western Asia, about 100 miles north of the Caspian Sea. A Cumberland Wigeon, reared in 1920, was killed in May, 1926, on the Petchora, North Russia; it was, doubtless, breeding.

The Gadwall and Pintail come in August as winter visitors, and there is nothing to suggest passage; the Shoveler is, as a rule, a little later. All three may leave before the end of April, though Capt. Boyd saw Gadwalls in Staffordshire on May 2nd. A pair seen on the same water on June 20th, and another pair watched by Mr. R. M. Garnett in Lleyn, were almost certainly breeding birds. Pintails captured in a Danish decoy and ringed have been recovered in Scotland and Ireland in winter, whilst others reached various parts of the Continent, even so far away as Italy, Spain, and Hungary, in winter, and have been recovered in summer in Northern Europe and Western Siberia. One Shoveler, ringed by Mr. Holder in Lancashire, was found in Holland in winter.

The Garganey, a summer resident, appears as a rule in April and leaves in September; Captain A. W. Boyd saw a duck and two drakes in Staffordshire on March 31st, and I have known them on passage in Cheshire on April 1st and 4th. Some of these birds were stimulated by sexual emotion. The American Wigeon (Plate 55), Green-winged and Blue-winged Teal (Plate 57), are very occasional wanderers across the Atlantic.

The courtship displays of Mallards continue after the birds have paired; indeed, I have seen an undoubtedly mated drake

in March posturing to a duck, and in November watched three birds swimming in a line. The first, a drake, constantly dipped his bill, just touching the surface—a common action in display—and the duck immediately imitated him; the third, an evidently unattached drake, followed suit, trying to call the duck's attention, but she ignored his actions. Another drake was most anxious to court a duck which was already nesting, but her mate over and over again attacked and drove away the unwelcome suitor.

The female Mallard when conducting young does not always squatter to call attention whilst her family escapes; I have seen her leading the young into shelter. She swam very low in the water, with her wings slightly open and depressed, and the brood followed close to her tail, which was elevated so as to show the under tail-coverts, as if to give them a mark to follow.

Teal display takes various forms. I have seen drakes chase the ducks, diving when the female dived, though both were barely submerged; drakes, too, will display and posture to one another, and make short dashes at rivals, when the ducks are contentedly swimming many yards away. I have seen display in June. Though diving of surface-feeding Ducks is usually due to nuptial excitement or play, Mr. C. Oldham (78) records a Shoveler diving for food in shallow water at Tring.

Diving and splashing is not, however, indulged in only during courtship; Col. H. A. F. Magrath (79) suggests that it may be due to "some irritation caused by the moult," but Mr. Jourdain (79) believes that the performance has "social significance." Surely, in many instances, it is nothing more than play, or exuberant vitality. Play in many animals includes pretence of hunting, and pretence of courtship, and this last may explain why actions, normally associated with display, may be observed at various seasons. My own opinion is that many of the postures, actions, and tricks, which we see

3 *Pl.* 58.

M 170.

Buffel-headed Ducks. (pp. 173, 281).

3 *W.* 59.

Tufted Duck—female. (pp. 171, 281).

M 171.

during courtship, are nothing more than ordinary traits emphasised.

The Diving Ducks.

The Pochard and Tufted Duck (Plate 59) nest on many waters and are steadily extending their breeding range, and doubtless this spread begins with normal migration. As winter visitors or passage migrants the bulk arrive in September, and leave again in April, but it is difficult to determine the status of early or late birds. In my own district the Tufted Duck remained until June before the first nesting was discovered, and though in Cheshire there is still no evidence that the Pochard has nested, birds in June and July are by no means uncommon. It appears to me certain that the summering of non-breeding examples of these and other ducks is more frequent than when the birds were less numerous, and were constantly molested. A Tufted Duck ringed as a young bird in Northumberland in 1915 was found in July, 1917, in North Finland, where it was presumably nesting; this will be called "abmigration," but I believe it to be a case of an effort to find a new nesting area.

The Goldeneye and Scaup are winter visitors and passage migrants—the latter also a scarce resident—which normally arrive and depart about the same time as the two previous species, but the Goldeneye often lingers until June, and in several years individuals have remained throughout the summer. One of these birds had certainly been wounded, but it is probable that others were uninjured and remained willingly. Scaup, well able to fly, have been on Cheshire waters in July as well as June, sometimes three or four birds in the same summer; this certainly suggests the deliberate summering of immature or non-breeding individuals. Another winter visitor, whose visiting months are practically the same, is the Long-tailed Duck; one immature bird arrived on a Cheshire

mere on July 29th, and we saw it last on September 24th. The nest of the Long-tailed Duck (Plate 123) was photographed by Mrs. Brindley on the Yenesei, where she found the bird common.

The most regular summerers of this group are the Scoters, both the Common and Velvet Scoters, for Mr. R. W. Jones has seen the latter in summer off the Welsh coast. As winter visitors or passage migrants they are described as arriving in September and leaving between March and June, and it is also said that *young birds* may remain all summer. From my own observations and those of personal friends, I have evidence of repeated visits to inland waters in Cheshire, Staffordshire, and Hertfordshire in July, as well as the occurrence of large flocks at that season off the Lancashire and Welsh coasts. Mr. F. Brownsword, who watches the sea off Colwyn with great regularity, told me in 1924 that he saw the first Scoters for the winter on July 6th, when there was an immense westward movement; the birds far out, undulating in flight, looked like a line of steamer smoke. On the 7th more passed, and on the 8th many were nearer shore; one line alone he estimated as extending for half a mile. His simile of steamer smoke is most descriptive; I have watched strings, which must have included thousands rather than hundreds of birds, rising and falling above the water, though not close to the waves, looking with the naked eye exactly like an undulating, wind-drifted smoke trail; sometimes the birds fly close to the water, lifting to the crests of the waves. Mr. Holder pointed out that the mature birds leave the water with less effort than the young, and this was very noticeable in numbers of birds that rose as we approached them in Liverpool Bay. Now many of the birds both at sea and on inland waters in June and July are, so far as it is possible to tell, mature, for the drakes have distinct orange patches on their bills; they are certainly not all young. Is it not probable

that large numbers of immigrant, non-breeding birds reach our waters in July, and that the species should be described as a visitor from July to June, some probably never leaving English seas ?

The Eider, an abundant resident in the north of England and Scotland, and in at least one locality in Ireland, is also a winter visitor, but to the south its visits are rare and irregular. Other Diving Ducks which are more or less irregular, and are usually classed as vagrants, are the Red-crested Pochard and White-eyed Ducks, northward wanderers from the Mediterranean area, the King-Eider and Steller's Eider (Plate 62) from the Arctic, and the Buffel-headed Duck (Plate 58), Harlequin-Duck (Plate 61), and Surf-Scoter from Greenland or North America. The last is now recognised as almost regular in winter in the Orkneys. The third authenticated occurrence of the Buffel-head was recorded from Scilly, where one was shot in January, 1920.

I have every reason to believe that a Harlequin drake, which was shot at Crossens near Southport in January, 1916 or 1917, was a genuine migrant, perhaps from Iceland. I have, to the best of my ability, investigated the occurrence ; the bird shows no signs of having been in captivity, and the man who shot it had no idea what it was, and parted with it to its present owner. Mr. C. E. Alford (80) points out that there are several characteristics by which the bird can be recognised, one being that when several are together they swim in *echelon* formation, each individual close behind but to one side of the one in front of it ; the males leading, the females together following. When feeding all members of a party dive as if by command, and rise simultaneously. He also comments on the extreme buoyancy of the bird when swimming, and the vigour of its dive, as if to counteract this buoyancy.

Mr. W. E. Glegg photographed the Red-crested Pochard at

its nest in the Camargue. This nest was in a thick bush on an island in the étang, and he had great difficulty in inducing the bird to pose ; finally he removed an egg, and the bird came down the "lane" to the nest to see what was the matter (Plate 60). The eggs he found were creamy-white, not "greenish stone" as described ; they may alter their colour during incubation, or be variable.

Mr. C. E. Alford (81) described the display of the Goldeneye, more emphatic than that of other Diving Ducks ; the bird jerks back its head until the nape touches the tail, and then jerks it violently forward, squeaking and splashing with its feet. Mr. A. W. Boyd and I have several times seen the performance : my earliest date is in January, but the competitive display is most vigorous in March and April.

The Eider, which has now extended its nesting range to Wigton, is not normally so close a sitter as has been suggested ; Mr. H. Boase (82) found that the duck leaves the nest for food or exercise, carefully covering the eggs with down, and is often escorted back by her mate. As we walked across the moors in Shetland we were constantly startled by the sitting ducks, which sprang up when almost trodden on. Their short wings seemed unable to lift their heavy bodies, and they blundered, bumping over the moss-hags, croaking dismally, until they managed to rise clear, when the feet were spread on either side of the tail in the manner so noticeable in the Puffin. All of the nests (Plate 65) we found were sheltered, either by a rock, a thick clump of ling, or the lip of a beck ; those by the beck were on the north side. Many were at a distance from the sea ; one was a mile and a half away. On the sea were many old and young birds, and some of the latter, no more than two-thirds grown, were throwing up their heads, settling themselves in the water, and cooing like amorous drakes. Their voice was a querulous *oo-ooo*. Indeed, many of these actions, most emphatic when drakes are displaying, are in all Ducks normal

3 *Pl.* 60. *M* 174.

Red-crested Pochard. (pp. 174, 280).

3 *Pl.* 61.

Harlequin-Ducks. (pp. 173, 281).

M 175.

in both old and young when certainly not excited by nuptial fervour; they are merely exaggerated by breeding birds.

The Saw-billed Ducks.

The Goosander and Red-breasted Merganser are resident in parts of Scotland and Ireland, but elsewhere are winter visitors or passage migrants, for both reach the Mediterranean in winter. They arrive on our coasts or inland waters in September or October, and remain until March or April, whilst passage birds occur in May. In Cheshire they seldom appear until late in the year, and April 9th is a late date for the Goosander; this bird is usually seen on fresh water, though seldom in large numbers, though Dr. K. Fisher saw about sixty together on Staines Reservoir in February, 1922. Mr. N. Abbott noted numbers on Morecambe Bay on April 13th, but it is seldom so abundant on the sea as the Merganser.

The Smew, a far northern breeder, is a winter visitor in very variable numbers, frequenting both fresh and salt water. I have not seen it later than April. The Hooded Merganser (Plate 64), a rare visitor from America, has only been recognised on a few occasions.

The display of the Goosander, which I have seen in March, is boisterous, and the duck took as much part as the drake; it consisted in a series of rushes, the birds half swimming, half flying along the water, bouncing along, and generally ending in a superficial dive. The splashing was considerable, for the Goosander is a heavy bird.

In the Shetlands we saw many families of Mergansers in the Voes, the ducks alone conducting the broods (Plate 40); the drakes were usually in small bachelor gatherings. The deep brown heads of the young in down were in striking contrast with the pale cheeks, and a dark line showed on the back

even when the birds were at a distance. Sheld-Ducks and Eiders will adopt and look after the young of other pairs, but when two duck Mergansers were swimming together with their respective families, some of the young got confused, and when the broods separated one old bird deliberately pecked a young one to drive it in the right direction ; the duckling followed, however, for a time, and then when again admonished, scuttled after its own parent and family at an amazing pace for so juvenile a bird.

Miss M. Garnett tells me that in the immature Goosander the irides are brownish near the pupil, and are surrounded by an orange ring. In two mature birds that she examined the irides were seal-brown, not carmine or red ; but this may have been due to the fact that they had been dead about twenty-four hours, or to contraction of the red portion and expansion of the brown when killed. In many birds there is a change in the colour of the iris due to great excitement or pain, and the colour of the eye of a dead bird is not necessarily normal.

Family PHŒNICOPTERIDÆ. The Flamingo.

Whether the few Flamingos which have visited the British Isles come from western Siberia or from southern Europe (Spain or the Camargue) is hard to say, but out of a number of reported birds fifteen or so are supposed to have been genuine wanderers rather than birds that had escaped from captivity. Most of the occurrences have been in autumn.

Although I have seen many Flamingos in captivity, I never realised the beauty of the birds until I saw them wild in the Camargue—not one or two, but many hundreds, probably two or three thousand altogether. When first seen, wading deep, far out on the étang, where, as Mr. W. E. Glegg (83) points out, mirage distorts and confuses the view, the long line of white birds, with necks submerged, resembled a flock

3 *W.* 62.

M 176.

Steller's Eider. (pp. 173, 280).

3 *Pl.* 63.

Eggs of Flamingo, Camargue. (pp. 176, 282).

M 177.

of grazing sheep. Very different, however, was the sight when we came upon some fifty or sixty birds feeding near the shore in water little more than a foot in depth. They stalked deliberately in line, keeping their pink, black-tipped bills submerged, and only occasionally raising a long neck with sinuous curve, stepping high, lifting the feet without a splash. Brine-shrimps, on which they largely feed, swarmed, but there were also many molluscs, and there was no suggestion of haste in the search for prey; whatever they were feeding on was captured with ease, probably sifted from mud or algæ in their bills. The bent bill was reversed, and the birds swept it slightly from side to side, scooping the mud or water. Now and then a bird rested a moment, raising the leg until the tarsus was parallel with the water, the heel behind, making, as Mr. R. C. Murphy (84) says of the Peruvian bird, "a figure 4 of the legs." Rosy white was the prevailing tint, for the black flights were screened by the drooping scapulars, but when one bird raised its head and saw us, and after a moment's inquiring glance with yellow eyes, raised a warning goose-like *honk*, the others ceased to feed, deliberately unfurled their great wings and took flight; in a second all was changed, as the brilliant scarlet and black of the under wings flashed into being. They did not go far before they again dropped to feed, but as they flew we noted the droop of the extended neck and long pink legs, the humped back and shoulders, "making a curious sinuous body line such as is characteristic of no other bird," to again quote Mr. Murphy.

Mr. W. E. Glegg obtained pictures of the scattered eggs (Plate 63) in the Camargue, and of one perfect nest, but his experiences, exceedingly interesting, added to the mystery of the bird. He found on one or two islands some 300 eggs, a few old mud nests, and attempts at new ones, but only a single well-made mound two feet high; yet all around were eggs "scattered like pebbles" and two or three days later these

were submerged by a change in the water-level, and vanished. He suspects that the Gulls reaped the harvest. Some birds were brooding on these apparently "dropped" eggs when he first saw them, but later the colony was deserted, and the birds moved elsewhere. When Dr. Eagle Clarke (85) visited the Camargue in 1894 and 1896 he estimated the strength in the first year at about 600, and the second between 1000 and 1500, but in 1924 in spring Mr. Glegg thought it double that number, and that was our impression in the autumn of the same year. Dr. Clarke did not detect a single immature bird, nor did we, but it is impossible to imagine that the colony has increased so greatly if failure to bring off broods is frequent, as we were informed by a local naturalist.

Mr. L. Griscom (86) found no birds in the winter of 1921, but heard that some had been seen a few days previously, and in October birds have been seen flying south in the Mediterranean; probably the Camargue birds are normally resident.

Family ARDEIDÆ. The Herons.

British Herons wander in winter, but show little evidence of definite migration, except in the Northern Islands, where some pass in early spring. Continental Herons, on the other hand, perform long journeys, for several ringed Danish Herons have been recovered in Portugal. The Bittern is a regular visitor in winter, though its numbers vary greatly. The few pairs which nest in Norfolk appear to remain all the year. North-bound Bitterns occasionally boom when on passage; one was heard in Cheshire in April, and I heard one in the same county in May, and in June a third was heard in Cumberland. When I listened to a male which was booming in Norfolk, not many yards from where I stood, I was surprised

3 Pl. 64. Hooded Merganser. (pp 175, 282). M 178.

3 *Pl* 65.

Eider and brood. (pp. 173, 281).

M 179.

at the comparatively small volume of sound, though the deep intake of breath was very distinct; yet this deep boom has wonderful carrying power.

The Bittern has a wide Palæarctic range, and we cannot say whence our winter visitors come, but the numbers which arrive fluctuate, doubtless due to meteorological conditions in their nesting haunts, or winter quarters. Bitterns were more than usually abundant in the later weeks of 1925 and the early weeks of 1926. These years of abundance are marked by a long obituary list, for though the Bittern is a protected bird, no effort seems to be made by the authorities, whose duty it is to see that the laws are enforced, to discover the transgressors.

The Purple Heron, which has occurred many times, is perhaps an irregular passage migrant rather than a mere wanderer, for it nests in Holland. In the Camargue and Holland I saw it alongside common Herons, when its small size and darker plumage, and especially its warm breast, made it very distinct. The Night-Heron and Little Bittern may also be on passage when they appear, for they nest in Central as well as Southern Europe, and their range extends to Africa. The former occurs as a rule in spring and autumn, at times of passage, though it has been recorded in summer and winter; the latter is mainly a visitor in spring and summer, and has occurred in May as far north as Unst in the Shetlands.

The Squacco Heron has a more southerly range, and its many visits may be solely due to autumn and winter wanderings, though it has occurred in spring. The Great White Heron (Plate 125) and the Little Egret (Plate 66) are much more infrequent wanderers from the south-east, and the Buff-backed Heron, though it nests in Spain and Portugal, has been satisfactorily identified on three occasions only; Mr. S. Lewis (87) has shown, I think, that the credentials of the Somerset bird are trustworthy. The American Bittern is known to have crossed the Atlantic at least forty times.

Mr. J. Vincent, objecting to my description of the Bittern's nest as a large platform, showed me one in which the bird was sitting on eggs, and I agree that the size that I described was due to the trampling and flattening of the nest-material by the old and young birds. The untrampled nest is certainly small for so large a bird, and in great contrast with the relatively large nest of the Purple Heron, which I have seen in Holland and is shown well in M. Burdet's photograph (Plate 124). On one nest a bird about three weeks old was crouching, whilst another, squatting on huge greenish-grey feet, watched us with pale yellow eyes. Its body and neck were elongated and its bill pointed skywards, as it remained motionless, facing us, two dark lines of feathers on its naked breast aiding concealment. The old birds croaked as they passed, but did not venture near.

When at rest the Little Bittern is unbirdlike; it crouches on the tarsi, with lowered head held stiffly and bill pointed forward, and with hunched shoulders, the feathers of back and scapulars raised high above its head. The striking difference in the plumage of the sexes, and the big white, buff-tinged wing patch of the male, are shown well in M. Burdet's picture of the two together at the nest (Plate 39).

Whether feeding or on the wing, the Little Egret is a striking bird; its dazzling whiteness made it easy to pick out from among Gulls in the Camargue, and when flying with other Herons over a Hungarian marsh. Its graceful drooping plumes were very conspicuous as it stalked deliberately, seeking food; but both these and the crest, which then lay back on the nape, were less noticeable in flight. When on the wing the head was carried well up, and the neck, though curved, was not bent back like that of the flying Common and Purple Herons; the legs trailed, sagging slightly. The flight was easy, neither deliberate nor hurried. The Great White Heron carried the neck back like other Herons.

Families CICONIIDÆ, PLATALEIDÆ, IBIDIDÆ, and BALEARICIDÆ. Storks, Spoonbill, Glossy Ibis, and Crane.

The Spoonbill is a regular passage migrant to the South and East Coast as far north as Norfolk; elsewhere, though it has occurred so far west as Ireland and north as the Shetlands, its visits are more irregular. It nests in Holland, but rarely farther north, and it is difficult to understand its not infrequent occurrence on the West Coast and Northern Isles, except as accidental wanderings. In Norfolk it has arrived in March, but is more usual in May and June, and is not infrequent in July, probably on return migration, and until October or even November. It has occurred in every month of the year in some parts of our islands.

The two Storks are rare and irregular passage migrants between Europe and Africa, though most of the occurrences of the White Stork, more frequent than those of the Black, have been on the South or East Coast and generally in spring. A Black Stork was seen by many people passing over Scolt Head, Norfolk, on June 9th, 1924.

The Glossy Ibis is very irregular, and its autumnal visits savour of invasions; the bird may come from south-eastern Europe, Asia, or Africa, but often, when it does come, many are reported. It has travelled so far north and west as Scotland, the Orkneys, and Ireland, and has reached Iceland and the Færoes. In the incursion of 1920 birds were seen in Cornwall, Hereford, and Norfolk at the beginning of September, and later in the month in Devon and Islay; in October they were recorded from Cumberland and Aberdeen, and on November 4th from Unst in Shetland. Captain Boyd (88) saw ten arrive in Cornwall on September 19th, for the immigration was not by any means all at one date; he tells that the birds had a

harsh grating call, *gr-a-a-k*, uttered when they rose to change their feeding-ground.

The Crane occurs, rarely, on passage between Scandinavia and Africa; it has reached the Shetlands and Ireland. Dr. B. B. Riviere (89) believes that a Demoiselle Crane, *Anthropoides virgo* (L.) which he watched at Blakeney in June, 1924, was a wild bird, though the species has been rejected when previously reported because it is a favourite bird in captivity; he saw no signs of its having been in captivity, and it was shy.

The Stork is now strangely rare in Holland; in 1926 we saw but one occupied nest, containing young birds in thick white down. The female stood on the nest and greeted the arriving male with bill claps; he then threw back his head until the crown almost touched his back, and, rapidly vibrating his mandibles, produced a loud rolling clatter. In Holland we saw many nesting Spoonbills (Plate 67), and near one haunt seven inquisitive birds flew three times round us at close quarters. I again noticed the slight droop at the throat. One bird raised its foot to scratch its face without losing elevation. They uttered deep grunting notes in flight.

Families OTIDIDÆ, ŒDICNEMIDÆ, CURSORIIDÆ, and GLAREOLIDÆ. Bustards, Stone-Curlew, Courser, and Pratincoles.

The Stone-Curlew, a regular summer resident, arrives towards the end of March and usually leaves in October, but not infrequently a few winter in the South-West. Its normal winter quarters are Africa. The Great Bustard used to nest in Britain, but now is only a very rare visitor; its size is, as a rule, its undoing. It still comes occasionally, but whether

3 *Pl.* 66.

N 182.

Little Egret. (pp. 180, 283).

3 *Pl.* 67.

Spoonbill at nest. (pp. 181, 283).

N 183.

wandering from Central Europe or Spain is hard to tell; it has occurred in Ireland, and at least three times in Orkney, the latest visit being on January 4th, 1924, when a bird was caught and kept alive until February 20th. The Little Bustard, which is an irregular visitor, usually in winter or spring, and the Houbara or Macqueen's Bustard, which has been recorded four times in autumn, come from further east, their habitat being South-Eastern Europe or Western Asia. The Cream-coloured Courser is an African bird which for some unexplained reason wanders from its desert home for colder northern winter quarters, for not only have over a score been met with in our comparatively mild Islands, but it is known as a straggler to many parts of Central Europe. Almost as eccentric is the behaviour of the Pratincole, rambling from Southern Europe or Africa at all seasons, though most of the dated occurrences in Britain have been in autumn; the more eastern Black-winged Pratincole has come, more rarely, in spring.

When listening to the Stone-Curlews at Dungeness I was struck by the way in which the call sometimes runs into a long rippling whistle.

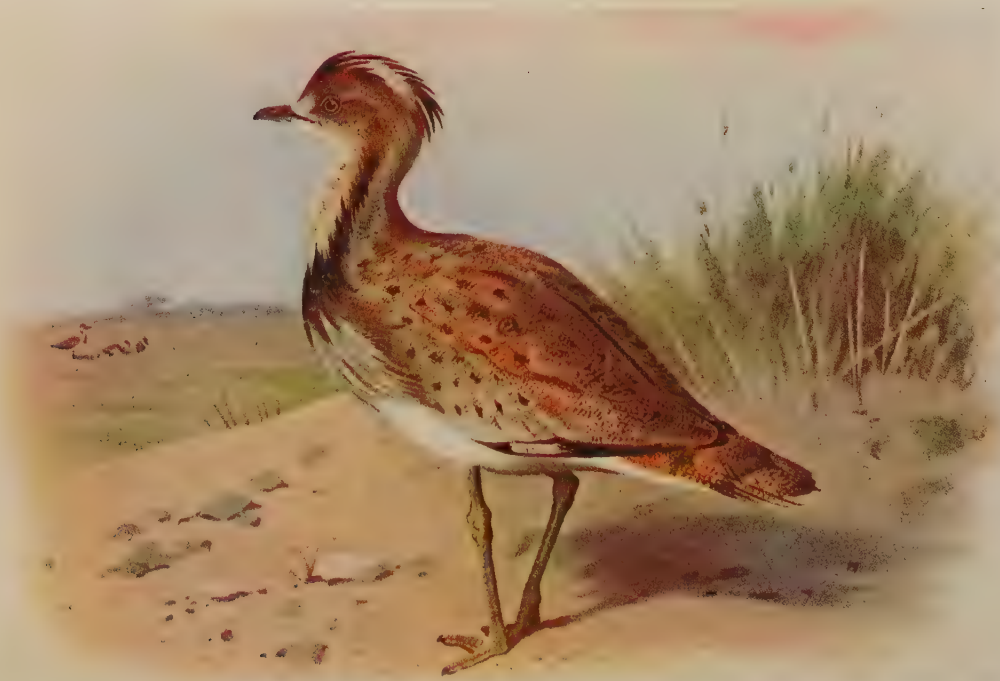
I have not seen free Cream-coloured Coursers, but have watched them in captivity and noted the heavy appearance of the head, the apparent shortness of the body, due no doubt to the short tail, and the striking contrast between the blue-grey nape and sandy back and wings; all much more noticeable in life than in skins. The birds were never still for long, nor did they ever walk, but progressed in short, quick runs, frequently stopping for a moment to turn the head sideways and glance upward; perhaps a habit which has origin in the fact that in the desert their greatest enemies are raptorial birds. Their legs, which looked short as they ran in a half-crouching attitude, were not, as described, creamy-white but distinctly yellow.

Mr. H. F. Witherby (90), says that in a Houbara Bustard (Plate 68) he saw at Spurn he was much struck by the pattern of the wings, the black being divided by a broad white band ; the tufts on the sides of the neck were very conspicuous. Mr. E. A. Wallis (91), speaking of a male Little Bustard, watched in the Champagne district, says that " as soon as he spread his wings and rose from the ground he flashed into a mass of pure white feathers, the only dark parts which showed being the black neck and a thin dark line along the outer margin of the wings. When he flew his wings made a remarkably loud whistling noise, which was audible for an astonishing distance."

Family CHARADRIIDÆ. Phalaropes, Woodcock, and Snipe.

The Red-necked Phalarope is a summer resident in the northern and western Scottish islands and in one or two places in Ireland, and though it occasionally visits our coasts and inland waters, is infrequent on passage ; it is possible that the normal route is well offshore. The bird nests farther north, and is known to visit winter quarters in the African area. The Grey Phalarope, an Arctic nester, though not an annual visitor, is occasionally abundant on passage, but its incursions usually follow strong off-sea winds.

The Common Snipe and Woodcock are both resident and abundant winter visitors and passage migrants. Immigration in spring, probably of passage Snipe, begins as a rule early in March, but autumn immigration and passage is at its height in August and September. In Cheshire I have notes of noticeable increase at the end of March and early in April, and in autumn as early as the end of the first week of August, but after that fluctuations, due to arrival or passage of winter birds, occur in September and October. The Woodcock passes in



3 *Pl.* 68.

Houbara or Macqueen's Bustard (pp. 183, 184, 284).

N 184.

3 *Pl.* 69. *N* 185.

Grey Phalarope on nest. (pp 188, 285).

March and April, but it is the advent of the autumn birds which is most noticeable; the influx begins towards the end of September and is usually at its height early in October, but arrival of later birds or those on passage south continues for many weeks, and there are often very marked winter movements due to weather variation. Woodcock ringed as nestlings in Britain have been recovered abroad. An unusual movement was recorded by Dr. Eagle Clarke (92); a bird ringed in Ireland in May, 1914, as a nestling was recovered in Shetland in June, 1917. This surely is a case of "abmigration" or an exceptional attempt to vary nesting quarters, especially when we compare it with the recovery of another Irish bird in Portugal.

The Jack-Snipe is a winter visitor and passage bird, arriving from North Europe in August, September, or October, and returning towards the end of March, though often lingering until early May. The infrequent appearance of the Great Snipe is supposed to be due to visits on passage rather than to a desire to winter, for the bird has a wide winter range in Africa; it is perhaps more regular than is supposed in autumn, for many Great Snipe may be killed and remain unrecognised. The Færoe Snipe, believed to be a good sub-species, has been identified in winter in a few places; it may be a regular winter visitor.

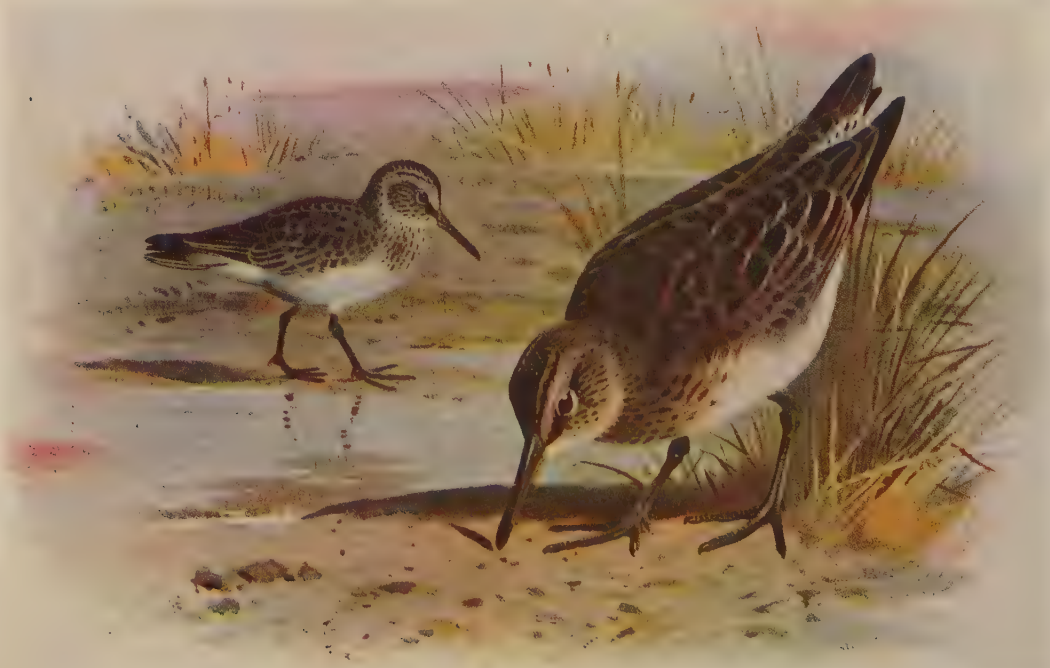
Col. R. Meinertzhagen (93) believes that a Snipe obtained in the Outer Hebrides in October, 1920, is the American *C. gallinago delicata*, and that it may be added to the British list. Mr. Witherby (94) gives a good description, with an illustration, of the plumage differences of the two forms. It is probable that we shall hear more of the American Snipe.

In *British Birds* is an abstract of a long paper by Dr. J. Schenk (95) on the European migrations of the Woodcock. The conclusions are based on statistics accumulated in Hungary, and on the experiences of observers elsewhere; many of them

are controversial and cannot be considered here. Some of the general conclusions are, that the Woodcocks from one summer area do not all seek the same winter quarters, but that birds from various nest areas may meet in winter haunts ; that the general direction in autumn is south-west, the birds starting on a broad front, but following coastwise routes when they strike a coast-line ; that coasting may lead them in the wrong direction, and that they may reach winter quarters after a long detour or be lost. Return in spring, he believes, is more direct, and is always by a broad front, the birds aided by power of orientation. He maps the coastwise routes which may or may not be correct, and believes that following coast-lines is characteristic of inexperienced young birds ; a freely used route is shown for Scottish and English Woodcocks round as well as across Ireland, and thence to Cornwall and Brittany. Perhaps the most important conclusion is that the greatest mass movements correspond with "favourable weather conditions," a north-westerly depression slowly moving east or north-east, but he does not consider that meteorological factors offer a complete explanation of migration phenomena.

Mr. H. G. Alexander (96) points out that he offers no explanation of the crossing of the North Sea by the Woodcock which strike our eastern seaboard every autumn, and indeed he shows no lines across the North Sea on his map ! It is perhaps fair to state that the map is founded on the supposed routes followed by birds which have been marked and recovered. There is no explanation of the routes taken by a bird which was ringed in April as a passing migrant at Heligoland and was shot in the autumn of the same year in co. Tyrone.

Dr. H. Weigold (16), commenting on this recovery, points out that the direct route from place of ringing to winter quarters where the bird was found is west-north-west, but believes that this Woodcock, and a Starling ringed at Heligoland and recovered in the same winter in Ireland, indicate a circular



3 *Pl.* 70. *N* 186.

Broad-billed Sandpiper. (pp. 193, 285).

3 *Pl.* 71.

Woodcock on nest. (pp. 187, 285).

N 187.

route. In the spring, on their way north, they passed over Heligoland, but in autumn he believes they returned and reached Ireland *viâ* Southern Norway and Scotland, " probably influenced by different weather-conditions and above all wind-conditions." Alternate choice of routes, he thinks, is of frequent occurrence, and may explain the variability of the appearance of such birds as the Bluethroat ; the circular route will mean that the birds are largely dependent on weather, but it does not prove that Woodcocks and Starlings always take the same alternate course or seek the same winter quarters. They are guided rather by weather-conditions than by inherited geographical instinct. Further, he questions if they find their way back to their native region once they have deviated from normal pathways ; birds which do return, as many do, to the place where they were hatched, have not wandered to unusual routes. " Nature does not proceed by rote ; herein lies the possibility of evolution."

My statement in Series II., p. 128, that the Jack-Snipe will occasionally call when flushed, has been questioned, but Mr. F. J. Stubbs, who was sceptical, put one up in 1921 and it " gave a squeaky imitation of the scape of the Common Snipe." In November, 1922, Mr. T. Hadfield and I twice flushed a Jack which rose silently, but when we quietly approached it from different directions it was puzzled, banked and called. In April, 1923, Captain A. W. Boyd put up three birds, and one " called distinctly, rather like a faint edition of the Common Snipe's call." In November of the same year I twice startled a bird into calling. Mr. R. Chislett's interesting account of the nesting of the Jack-Snipe in Lapland (*British Birds*, xxi. 2) contains his impression of the strange sounds that Woolley called its " love song," which are never heard in England.

The soft browns of the sitting Woodcock harmonise with the surrounding dead leaves so that no lines show even of the rounded head and straight bill, yet Capt. Knight (71) had

evidence that in Scotland the camouflage does not baffle the eyes of the Hooded Crow.

The Grey Phalarope on its nest (Plate 69) was photographed by Mrs. Brindley (97) at Golchika in Siberia. She says that the male birds were more inconspicuous off the nest than on it, for when sitting they puff out their red breasts, but when they leave the nest seem to shrink to half the size, and their plumage pattern and colour scheme harmonise with the long grass. She found fresh eggs on July 8th, and newly hatched chicks from another nest eight days later, "but the young ones fledge incredibly quickly, and by the beginning of August there was not a bird to be seen in the marshes." The Grey Phalarope, she tells, was the first migrant to leave in summer, though she found the Red-necked Phalarope in first plumage up to the end of August. The bird, however, though probably from Scottish haunts, has reached Cheshire by August 5th.

Mrs. Brindley found that the Red-necked Phalaropes in Siberia were not so absurdly tame as in the British Islands, and were rather wild when they had young.

When in the spring of 1925 I visited a nesting colony I found only one bird that showed any anxiety near the nest, flying round me with erratic, jerky flight, repeating a sharp but low *wik, wik, wik.* The nests were in a deep marsh of bog-bean, mimulus, equisetum, and flags. Both males and females fed at my feet as I sat at the edge of the loch, and occasionally flew over the water, looking like little Dunlins, zig-zagging from side to side, and calling as they flew. The white spot over the eye of the female was much more distinct than that on the male; on the closed wings the buff stripes are very noticeable, converging towards the rump, and a whitish spot shows near the angle; the grey on the crown tails off to a narrow streak on the neck. The legs were pale, not dark, slate-blue (Plate 44).

Miss Garnett finds the legs of the Common Snipe are pale

greenish rather than greenish-brown, and calls my attention to the conspicuous pale mark on the culmen of the Jack Snipe. In the nestling Woodcock the bill and feet are much darker and browner than in the adult bird.

Knot, Dunlins, and Stints.

The Knot, which nests in very high latitudes, is an abundant and most interesting passage migrant and winter visitor; the passage birds may travel so far as South Africa, but our Islands are well within the winter range. The first birds, young of the year, usually arrive before the end of July, but the main body of mature birds does not come as a rule until September. On the West Coast, where in suitable bays and estuaries it is far more plentiful than is suggested by most writers, immigrant young birds with buff breasts may come as early as July 20th. Mr. F. W. Holder, who keeps constant watch on the movements of birds on the Lancashire coast, has given me many particulars of the Knot and other Waders. Large numbers move on in September and October, or even later, but the winter flocks are by no means small. These are increased by returning passage birds in March, and towards the end of the month many are in partial summer dress; in April there is constant movement northward, most departing before the end of the third week. I have seen passage birds in full red so late as May 11th, but in June many retain grey dress. These June birds are puzzling; they may be late migrants or summerers, for, of late at any rate, a number have remained in Lancashire all summer, and almost invariably retain winter grey. Mr. Holder noticed some 500 grey birds until June 20th in 1916, when most left, apparently moving north-west; but about 100 remained until, on July 14th, they had been joined by others, and the flock numbered about 300 individuals; on this date these also left. In 1919, however, he watched a flock of six

or seven hundred Knots throughout May, June, and July, and all but about a score were grey birds. On July 20th buff-breasted young joined them. In 1920 he watched about one hundred, but by August 8th there were many thousands on the shore; in 1921 the summerers numbered between three and four hundred, and, as appears to be the habit of summering birds, spent most of their time on the "slacks" in the dunes, and not on the shore. It may be that at this season they are attracted by a tundra-like environment. The summering flocks in 1924 and 1925 were bigger than ever—twelve to fifteen hundred in the former year, and fully two thousand in the latter.

The belief or theory that there are two distinct forms of the Dunlin in the British Isles, one resident and perhaps non-migratory, and the other a winter visitor and passage migrant, is as yet supported by slender evidence; it is wiser to consider the movements of the species. Passage and autumn immigration lasts from July to November, and spring migration from March to June, but I have seen birds on the South Coast on June 3rd, and the East Coast on June 24th, which were apparently in full breeding dress; they may have been late passers or have been summering, for they were far from normal nesting haunts.

Mr. Holder gives me the dates in three consecutive years when he first noted young birds on the Lancashire coast—July 9th twice, and 1st once, but as the Dunlin nests but a few miles away, these were probably local. Passage at the end of July and early in August is noticeable by the frequent appearance of birds, as a rule young of the year, on inland waters; July 18th is my earliest date, but I have no proof of whence the birds came. Throughout August and September passing Dunlins are frequent on lakes, reservoirs and sewage-farms, as well as on the beaches and coastal marshes. But for inland waters I have few dates in October and November, and from

3 *Pl.* 72. Little Stint at nest. (pp. 191, 286). *N* 190.

3 *Pl.* 73.

American Stint. (pp. 192, 286).

N 191.

December to February Dunlins inland are in my experience uncommon. Early in March some birds appear, usually in winter dress, and throughout that month and April passage is continuous. Small parties of non-breeding birds remain all summer.

The Purple Sandpiper, a winter visitor and passage migrant, arrives from early August onwards, and is again noticed on passage or emigrating from March until the beginning of June. My earliest date is August 22nd for the Welsh coast, and the birds, a small party, were apparently tired.

The Curlew-Sandpiper nests in Arctic Asia and winters in Africa, sometimes far south ; the Little Stint's breeding range includes the far north of Europe and the Arctic islands ; it too winters in Africa, and both are regular visitors in autumn on southward migration, but less regular on the return journey. Indeed, the numbers which visit us are always variable, and in some years very few are noticed, but in others—the autumn of 1923, for instance—many appear on inland waters and sewage-farms in all parts of England. Young birds reach our shores towards the end of July, and passage continues until October or November.

Mrs. Brindley (98) found young in down near Golchika on July 20th, and shot one in first plumage on August 1st, but she saw neither young nor old after August 14th. So soon as the young were hatched the old birds led them from the dry tundra to the bogs.

Return migrants may appear in March, and stragglers are still passing in some years in June or even in July, but in neither species are summer visitors or wintering birds more than occasionally noticed. My earliest record for autumn passage on the West Coast is August 10th, but as a rule none is noticed before September ; in that month and October I have many records of birds inland, usually on sewage-farms. The Little Stint not infrequently travels with the Curlew-Sandpiper, but

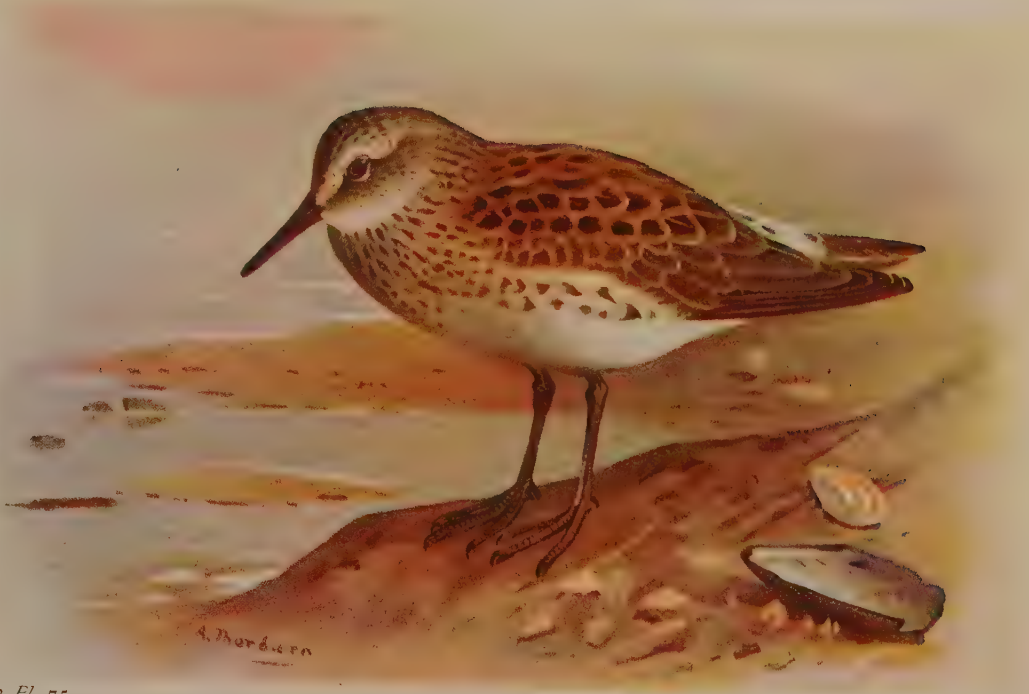
I have known it earlier and later; my dates for inland waters range from August 23rd to November 4th. Dr. N. Joy saw it on the Reading Sewage-Farm on August 1st. On June 26th, 1923, Miss E. L. Turner and I saw a Little Stint in summer plumage on the flooded marshes at Cley.

Temminck's Stint is rarer on passage than the Little Stint, though its range—Arctic Europe and Asia in summer to North Africa in winter—is not dissimilar. It passes on autumn migration between July and the end of September, but is very rare in spring, when, however, it has occurred at Fair Island; its visits in autumn are as a rule to the East and South Coasts of England. The American Stint (Plate 73), which has been recorded from Greenland and the Bermudas, has appeared on our shores at least four times. Mrs. Brindley (99) photographed both the Little and Temminck's Stint at the mouth of the Yenesei (Plates 72, 74), and noticed some interesting differences in their habits. They appeared about the same time, but the Little Stint was the commoner and much tamer bird, more peaceful and less jealous of the feeding-ground than Temminck's, which drove other birds away and even threatened the Samoyede dogs. Between July 3rd and 17th she found nests with eggs, and here again the Little Stint gave no trouble; she did not need a tent, and could place the camera three feet from the nest, and even catch the sitting bird. One nest contained young, and these she covered with her cap, but the male bird crept beneath it to brood, and when caught and released at once returned to cover the young. The Little Stint, she says, was "tame and confiding," Temminck's "wild and fractious," and with it she required a tent and even then found difficulty in securing pictures. The Little Stint nested in dwarf willows near a sphagnum marsh, but Temminck's, also in willow scrub, was always near running water; many nests of the former were lined with leaves, but the latter with grasses coiled round the hollow. Flocks were formed in

3 H 74

N 192.

Temminck's Stint at nest. (pp. 192, 286).



3 *Pl.* 75.

Bonaparte's Sandpiper. (pp. 193, 287).

N 193

the first week in August, and by the 25th most of both species had left.

The American Pectoral Sandpiper occurs in western North America and Eastern Siberia and normally winters in South America, but nearly fifty have been recorded from the British Islands; but the Siberian Pectoral Sandpiper, from North-East Siberia, has been but once or twice identified.

Two rare visitors from Arctic America are Bonaparte's Sandpiper (Plate 75) and Baird's Sandpiper; the former has been noticed less than a score of times, and both in spring and autumn, but the latter only in autumn on about five occasions.

The Broad-billed Sandpiper (Plate 70) nests in Scandinavia and migrates to the Mediterranean, yet it has been noted on a few occasions only and generally in autumn. It has been taken in Scotland and Ireland, but usually in Sussex, Kent, or Norfolk. The Terek Sandpiper from North-East Europe rarely migrates westwards; seven birds were obtained from two unfortunate flocks which visited Kent and Sussex in May in 1912 and 1915.

The Ruff, Sanderling, and others.

As the Ruff has nested recently in England, it is probable that better protection and self-denial on the part of collectors would reinstate it in its old haunts; to-day, however, it is mainly a passage migrant in April, May, and June, and in August, September, and October. Occurrences of birds in July and November may be due to summering or wintering. The Ruff breeds in Northern and Central Europe, abundantly on preserved ground in Holland, and though most regular on our eastern shores is annual in the west in autumn and by no means scarce in spring. In the last ten years I have over thirty records for north-western counties, all from suitable

haunts which are carefully watched. My earliest date is July 24th, and most occurrences have been in September ; the spring observations have been in April and May, and in the later month many birds were in full plumage, for they have appeared in parties, nor merely occurrences of single stragglers. A few autumn birds have been with other Waders on the shore, but most observations are from sewage-farms. Ruffs which we saw on the flooded marsh at Cley in Norfolk on June 26th may have been non-breeding summering birds, or have had other intentions.

The Sanderling, a winter visitor and passage migrant, is also present in some numbers in summer. Passage, of young birds, begins towards the end of July and lasts well into November. The Sanderling breeds in the Arctic—Greenland, Spitzbergen, Siberia, etc.—and winter quarters range so far south as South Africa and Australia. On the Lancashire coast Mr. F. W. Holder has noted arrival so early as July 15th, and I have seen large numbers on the shore by the 23rd, but the greatest autumnal movements are in September. Late in March and in early April there is a marked increase, and on April 20th, one year, Mr. Holder wrote me that Sanderlings were "pouring in." In 1918, when the bird was more numerous than usual, passage reached its height about May 6th, when the species "dominated the beach" ; in Anglesey I noted the largest movement at the end of May. Inland the Sanderling is much less frequent than the Ruff on reservoirs and sewage-farms, and most records for western counties are in August and early September. I have one or two notes of wintering birds inland in December and January, and a few only for spring passage in April and May. The later birds are in partial or full summer dress.

The Buff-breasted Sandpiper (Plate 77), Bartram's Sandpiper (Plate 89), and the Semi-palmated Sandpiper are very occasional wanderers from Arctic North America ; the two

N 194.

3 *Pl.* 76.

Ruffs and two Reeves. (pp. 195, 288).

3 *Pl.* 77.

Buff-breasted Sandpiper. (pp. 194, 287).

first are casual elsewhere in Europe. Both have been noted most frequently on the South and East Coast in autumn or winter, and are not recorded from far north. The Semi-palmated Sandpiper has but once been recorded.

The fighting of the Ruffs (Plate 76) has been studied by many ornithologists, but Mr. C. B. Moffat (100) arrived at different conclusions from Mr. E. Selous and others after watching four captive birds in Dublin. As Miss E. L. Turner (101) says, the "hills" get trodden down when the excited birds "rush round with the regularity of a clockwork mouse," but in Holland I saw no special advantage in any particular hill. Mr. Moffat remarks on this with regard to the two "hills" chosen by the two Ruffs in the aviary, and yet one bird not only dominated one hill but retained in its neighbourhood the two Reeves. The unsuccessful competitor made many attempts to secure this hill, but it was not until the master bird began to moult, and his sexual fervour was relaxed, that the outcast suddenly became master, occupying the desired hills and retaining the two Reeves. The law of territory may have greater influence upon both male and female than the showy dress.

There is little actual fighting, and in Holland when I have watched them, they do one another little visible harm, even when, as Miss Turner points out, they peck at the face warts of an antagonist. When a dozen Ruffs were posturing and dancing in mock heroics, the arrival of a Reeve caused every bird to freeze with bill to ground and ruff fully expanded. There they remained motionless, as if to be admired, until another male arrived, when all would jump and feint with much rustling of plumage. Mr. Moffat was struck by the fact that when one of the harem strayed from the territory it was at once rounded up by the Ruff, and that the frill then functioned as a "driving-bush." The pugilistic fervour of the Ruff does not end with the autumn, for Mr. R. Cottam tells

me that he has seen the birds posturing and fighting in winter quarters at Khartoum.

When watching Ruffs on the sewage-farms, where they feed with Redshanks, I find that when the two species are on the wing together, the flight of the Ruff is stronger though slower than that of the Redshank.

The Sandpipers, Redshanks, and Greenshank.

The Common Sandpiper, a summer resident, appears, as a rule, in the first week in April and leaves in September or October, but in the south March records are not uncommon. The occurrence of Sandpipers so early as March 11th and 14th is considered worthy of notice ; but the bird has wintered with us, even so far north as the Lake District, so that there is always the possibility that the first birds seen had never left the country. In northern counties of England the Sandpiper is rare in the first week of April, and often does not arrive before the second half of the month. Passage between Northern Europe and Africa—some nest north of the Arctic Circle and some reach South Africa in winter—lasts until late in May, and return migration begins in late July ; but most birds have passed or emigrated before the end of October.

As some of our home-bred Redshanks have been taken in France, and as many birds ringed as nestlings have undertaken considerable journeys south in autumn—Lancashire to Devon, for instance—it is probable that the bird is to some extent a summer resident, though others are evidently permanent residents. As a winter visitor and passage migrant from European nesting haunts to Africa, where it ranges far south in winter, it is abundant, autumn passage beginning in July and lasting until November, and return passage in spring being most marked in April and May. During September and October I notice considerable fluctuations in favourite

haunts, which begin with a large passage of young in the first week of September, or, more rarely, in August. On the Lancashire coast Mr. F. W. Holder sees the first increase early in July. We have, however, no means of telling if these early young birds are British bred or if they are from overseas. In spring many pass during the second or third week in March. That the Iceland Redshank occurs from autumn to spring is now recognised, but to what extent it is a winter visitor or passage migrant—it has been taken in Morocco—is still uncertain.

Plate 43 shows the Redshank nesting in an unscreened nest, as mentioned in Series II.

The Spotted Redshank is an irregular passage migrant in most parts of our Islands, though its visits from Yorkshire southward are annual. It nests in Arctic Europe and Asia and travels at any rate so far south as the Mediterranean in winter. In the western English counties the bird is rare, though in the autumns of 1921 to 1924 far more than usual were observed, and the migration on the East Coast was above the average; in 1923 and 1924 birds were observed or shot in December. In 1923 there were some in Cheshire, Shropshire, and Somerset, and in 1924 in Cheshire and Wigton. Two paid a visit of a few days to a sewage-farm which I watch, and I wrote the note as *tchwee, tchwee.*

The Green and Wood-Sandpipers are passage migrants from March to May and July to September, but the former is also a fairly regular winter visitor and has been seen in summer. They breed in Northern Europe and Asia, and some individuals reach South Africa in winter. Capt. A. W. Boyd saw a Wood-Sandpiper in Norfolk in June, but this is exceptionally late. Birds on passage may remain for many weeks; thus on one sewage-farm Green Sandpipers were present from the end of July until the middle of September.

The Greenshank, which nests sparingly in Scotland, is a

passage migrant between North Europe and Africa, from July to late November, and in April and May ; it too occasionally winters in Britain.

The Marsh-Sandpiper inhabits Siberia and South-eastern Europe and migrates to Africa ; it has been recorded about half a dozen times. One that I saw in the Camargue, where it possibly nests, struck me at once as very like a small Greenshank in winter dress. From a distance its face and neck looked white and its whole plumage very grey ; its white lower back and rump were very conspicuous when it rose. The Grey-rumped Sandpiper's summer quarters are in the far east of Asia, and if the male and female, which were shot in Sussex within five days of one another in September, 1914, reached England unaided, the occurrence is one of the most inexplicable of bird wanderings.

The Red-breasted Sandpiper or Snipe, though not classed with the other Sandpipers in the genus *Tringa*, may be included in this group for convenience. It is an inhabitant of eastern North America which has found its way across the Atlantic on many occasions, but, though it is known to occur in Greenland, its occurrences in Scotland have been in the southern half, and it has reached Ireland, and the South and East Coasts of England on most occasions. Had it travelled from island to island it would most likely have been recognised in Shetland or at Fair Island, where another occasional American visitor, the Yellowshank, has been observed. The Yellowshank (Plate 78), the Greater Yellowshank, the Spotted Sandpiper, and the Solitary Sandpiper (Plate 81) are all North American visitors which, naturally, do not occur often, but from the fact that many of the records come from the South-west and from Ireland, we may conclude that the birds have travelled eastward or have been blown far out to sea and crossed the Atlantic by a more or less direct course.

3 *Pl.* 78.

O 198.

Yellowshank. (pp. 198, 288)

3 *N.* 79.

Black-tailed Godwits at Nest. (pp. 201, 289).

O 199.

Curlews, Godwits, Stilt, and Avocet.

The Curlew regularly migrates from its summer haunts to the coast, and many birds wander far in winter, some crossing the Irish sea, some reaching southern counties, but there is little evidence of autumnal movement to the Continent of British-bred birds. As winter visitors or passage migrants Curlews seek our shores from August onwards, and begin to return early in March, but as our birds are nomadic it is difficult to distinguish regular from irregular migrations. Even in the breeding season, if the nesting haunt is at no great distance from the coast, birds pass to and fro between nest and feeding-ground, whilst non-breeding birds remain in considerable numbers on the shores throughout the summer and visit inland haunts. In Lancashire and Cheshire I have seen Curlews, singly or in small parties, passing west or south from the middle of July to the end of September, with noticeable passages, both by day and night, at the end of July and end of August, but in the latter month and September I have notes of others travelling east and north-west. The Pennine moors are usually reached between the beginning of March and middle of April, weather conditions regulating the date, but occasionally pioneer birds seek the uplands in February. Curlews come off the hills from early in July, and birds seen on the move in June may be merely seeking temporary feeding haunts on the shore or by inland waters. The largest passage movements in spring in northern counties are in March and April, but at the end of April and in early May, night passages, apparently of considerable magnitude from the frequency of the flight calls, are not unusual. Throughout winter Curlews are not uncommon in inland haunts.

In 1911, Tom Evans, quartermaster on the *Mauretania*, an experienced wildfowler, told me that when between 400 and 500 miles out from New York on June 15th, a Curlew came

aboard, leaving three days later to fly towards the Irish coast; in the first week in August, 1913, he was on the ill-fated *Lusitania*, 470 miles east of the "Banks," when two Curlews flew alongside, and remained with them until land was sighted; he suspected that they rested on the boat at night, but never saw them come on board. What these birds were doing so far west of the normal range no one can say, nor if they were originally wandering east or west, but the eastward-bound boats were, for them, a possible salvation.

The Whimbrel, which nests sparingly in Shetland, is elsewhere a passage migrant between Northern Europe or Greenland and the coasts of Africa. It passes north from late March or early April until June, and returns from the end of July until December, spending many weeks on our shores on both passages. Occasionally birds remain throughout both summer and winter. My dates for arrival in Lancashire, Cheshire, and North Wales range from April 6th to June 10th, most passing between the 20th and the end of April, but there are occasional large movements, both by day and night, throughout May. Birds passing early in July may have been summering; my earliest date for distinct southward passage is July 24th. There are many records of wintering Whimbrels, but I have once only seen the bird myself at the end of December and early in January.

In the Shetlands, where Mr. W. E. Glegg photographed the Whimbrel at the nest (Plate 80) I found it much less common than the Curlew, and agree with Mr. Glegg that it is now a "rare breeding bird"; competition with the Curlew may explain its diminished numbers, but I suspect the ravages of Crows, Gulls, Skuas, and perhaps human egg-seekers. Miss M. Garnett tells me that the bill of a Whimbrel—she thinks immature—which she examined was lilac-grey, blackish at the tip.

The Eskimo Curlew (Plate 82), an American bird which

3 *Fl.* 80. Q 200.

Whimbrel at nest. (pp 200, 289).

3 *Pl.* 81.

Solitary Sandpiper. (pp. 198, 289).

O 201.

appears to have become extinct since 1915, has been recorded in our Islands, as has the Slender-billed Curlew, a West Siberian species which winters in the Mediterranean. Col. H. W. Madoc and I were fortunate in seeing one or two Slender-billed Curlews with Common Curlews in the Camargue in September. From the small size and short bill we thought at first that they were Whimbrel, until we saw that the head marking was different.

The Bar-tailed Godwit is an abundant winter visitor and passage migrant, and many remain on our shores all summer. Autumn immigrants arrive early in July, and return migration begins in April and lasts well into June. In Lancashire Mr. Holder has noted arrival on July 10th and 12th; from the end of the month to September the numbers increase, and some linger until November, after which birds on the shore are probably wintering. In August, September, and January I have known birds inland, but it is uncommon on inland waters. March 9th is an early date for increase of the wintering flocks, and in most years many have gone north before the end of April; on the East Coast I have seen large passages in May and known the bird as late as June 28th.

The Black-tailed Godwit is far less plentiful on passage than the Bar-tailed, although it nests in Iceland and so near our shores as Holland (Plate 72). It is more regular on the East and South coasts than in the West, and yet it is by no means rare on the Lancashire shore, not merely on passage, but as an occasional winterer, and, very rarely, as a summering bird. My own observations, and those of Mr. F. W. Holder and others, cover every month except May; it has been most frequently noticed in July.

The Avocet nests in Denmark and Holland—where Dr. van Oordt finds that some number winter—as well as farther south; in Britain it is best known as a rare passage migrant in spring on the South and East Coasts, but has occasionally been

noted elsewhere. In December, 1921, Mr. F. K. Boston (102) found remains of three Avocets on the Lancashire shore, but it is rare in autumn.

The Black-winged Stilt nests in South Europe and Africa, and has nested in Belgium ; it has visited Britain occasionally, usually in summer, and most frequently to the South and East Coasts, though there are records for Wales, Ireland, and the northern Scottish islands. Mr. Glegg photographed the nest in the Camargue (Plate 51).

Mr. W. E. Glegg (103), when he photographed the Avocet in the Camargue (Plate 83), found it nesting on mud below flood-level. The Camargue birds strove to divert his attention, flying with dangling legs (Plate 84) and they employed this trick to lure us from young in Holland, alternating it by running, half crouching, with head lowered, shoulders raised, and wings spread and bowed. Frequently the feathers of back, scapulars, and wings were shivered violently. We saw young of various ages ; even when just out of the egg the bill was visibly recurved. The down was black and chestnut above and white below, the bill dull leaden, the legs at first pale blue and darker later, and the irides dark brown. Many very young birds were swimming with their parents.

The long legs of the Black-tailed Godwit project far beyond the spread tail when the bird is wheeling, calling anxiously, above the invaded nesting ground. The strong white bar is very noticeable on the open wing. The young we found were black and brown, with short, straight lead-grey bills, rather broad towards the tip, and pale grey legs.

Prof. Julian Huxley (104) decided that the Avocet had no nuptial song or aerial display—in fact no ordinary courtship, though the female had an invitatory pose. He describes (105) the ceremonial flight of the Black-tailed Godwit, and especially notes the descent, when the bird " side-slips in all directions "

3 *Pl.* 82. *O* 202

Eskimo Curlew. (pp. 200, 289).

3 *Pl.* 83. Avocet and nest. (pp. 201, 290). *O* 203.

in its headlong dive. But this "shooting" descent is by no means purely nuptial, for Black-tails and Bar-tails, when alighting in autumn, frequently adopt this method; it is most noticeable when the shore flocks are gathering at high tide, and late arrivals join the already massed congregation.

The Golden and Grey Plovers.

As the exact status of our resident Golden Plover, and the Northern European bird, which also nests in Iceland and Greenland, is not known, we can at present say only that Golden Plovers of one form or the other are common winter visitors and passage migrants, arriving, usually, in August, and about the middle of March on return passage, and that some reach Africa. Wintering birds are subject to frequent weather movements westward.

In North Wales, Lancashire, and Cheshire the lowland fields are usually, but not always, deserted by wintering flocks late in March or early in April, and apparently many of the birds are British nesters. I noticed one year passage on April 6th, and on the 7th residents arrived on the Pennines for the first time, but after this there are constant fluctuations as passage birds come in. In another year passage was noticed simultaneously in Carnarvonshire and Cheshire between March 30th and April 1st, and a fortnight later many arrived in summer dress; in yet another summer birds were present in large numbers on March 19th, but all had vanished four days later. Mr. Holder notes passage from about April 14th to May 5th, after the wintering flocks have left, and the largest numbers pass at the end of April. In 1924 the Cheshire fields received a large immigration until March 24th, when all vanished; but on April 12th the numbers were as great as before, and Mr. Holder saw a great influx in Lancashire on April 21st.

Birds on the marshes at the end of June and in the fields early in July may have been summering, for the usual date for the arrival of northern immigrants is towards the end of July or early in August. In October, on a mild day, I have watched aerial performances similar to the courtship evolutions of spring.

The Eastern Golden Plover nests in Arctic Asia and winters in the Pacific, but has strayed to Europe, and over a dozen have been recorded in Britain from the southern counties and from Orkney. The American Golden Plover has been recognised more rarely in Scotland, Ireland, and the South Coast of England.

The Grey Plover breeds in Arctic Europe, Asia, and Greenland, and some reach South Africa, but its winter range includes our Islands, where it is also a regular passage migrant from July onwards, returning from the south and emigrating in March and April, but occasionally lingering until summer. Although it is affirmed to be less frequent on the West than on the East Coast, and to be scarce north of the Solway, my own experiences prove that it is regular on both migrations on the West Coast, is always present in winter, and that small numbers linger through the summer; it is well known in Ireland. In Lancashire passage is most marked in April and May, and the black-bellied autumn immigrants appear as a rule in the third week of August; some show dark breasts so late as the middle of October. Mrs. Brindley photographed the nest on the Yenesei (Plate 48).

The Golden Plover is expert at concealing the locality of the nest (Plate 88) and employs elaborate artifices to lure the intruder from its vicinity, and in the Shetlands, in 1925, I witnessed a most interesting performance. One of a pair mounted guard at a distance from the nest, and the other began the usual "broken-wing" deceit, gradually retiring to a moss-hag, where it suddenly collapsed with outspread wings and

tail, and with its head hanging limply over a low bank. There it lay as if dead, but when I made no attempt to approach, raised its head, squealed as if in pain, and again "died." As this trick did not produce the desired effect, the bird suddenly came to life, ran towards me, calling in distress, and then with drooping wings and spread tail trailing on the ground, tried to make me follow with the usual energetic actions.

This habit of a mock faint or death is not monopolised by the Golden Plover. I am not aware if it is one of the many ruses employed by the Black-winged Stilt, but Mr. Guthrie-Smith (5) describes the behaviour of the colonial Pied Stilt of New Zealand, a closely allied species. After many strange performances, calculated to command attention, "the end comes slowly, surely, a miserable flurry and scraping, the dying Stilt, however, even in *articulo mortis*, contriving to avoid inconvenient stones—upon which decently to expire. When on some shingle bank well removed from the eggs and nests half a dozen Stilts—for they often die in companies—go through these performances, agonising and fainting, the sight is quaint indeed."

The Ringed and Kentish Plovers.

The Ringed Plover, an abundant resident, is also a winter visitor and passage migrant, arriving from Northern Europe or Iceland about the middle of August, and some birds reach Cape Colony in winter. Return migration is first noticed in March, but in the northern counties seldom until early in April, and it reaches its height at the end of this month or early in May. Autumn movements in Lancashire, and also in inland counties in the north, begin late in July, but are most noticeable in August and September. Although in the estuaries and on coastal marshes winter flocks are always about, the sandy

shores are usually deserted from November to February. The Semipalmated Ringed Plover is an American bird which has once been recorded from Sussex.

The Kentish Plover is a rare or very local Summer Resident, frequenting parts of the South Coast from early April until the end of September. It has been recorded in March, and from the Hampshire Lights as late as October 10th. Though it nests in South Sweden and Holland (Plate 126), it is very uncommon on passage migration and is almost unknown in the West; nevertheless, I have seen it once in spring and once in autumn—a young bird—in Cheshire, and have two or three other West Coasts reports.

The Little Ringed Plover nests in various parts of Europe, but is rarely met with on passage; most occurrences have been on the South or East Coasts, but once in the Outer Hebrides. When I saw the bird in the Camargue I noticed its "spectacled" appearance. The legs looked yellowish, though Mr. H. F. Witherby describes them as "pale flesh"; Saunders calls them "pale ochre" (Plate 85).

The Killdeer (Plate 127) is an American vagrant, recorded at various seasons, mostly on the South Coast, but once from Scotland; the Caspian Plover (Plate 90) is a very rare wanderer from South-East Europe.

In Series II. I commented on the variation in site and decoration of the nest of the Ringed Plover, but one of the most extraordinary sites that I have met with was an undecorated scoop in charred cinders which had fallen from a cresset on the dunes. In the blackish setting the eggs were most conspicuous, but were not found by egg-stealing birds; at Scolt Head most of the first nests were robbed by Rooks and Carrion Crows, and the birds made fresh scoops beneath the suæda bushes. Mature Ringed Plovers are very demonstrative when the young are hatched, feigning disablement, and by

3 *W.* 84. *O* 206.

Avocet threatening to attack. (pp. 202, 290).

3 *Pl.* 85.

Little Ringed Plover. (pp. 206, 290).

O 207.

extravagant behaviour, trailing or fanning the wings, and spreading the tail, they endeavour to attract attention to themselves; the expanded tail, which is dragged along the ground, has a pattern which certainly catches the eye—a brown centre, white outer feathers, and broad subterminal band—and doubtless is useful when other than human enemies threaten the young. One young bird, after I had ringed and released it, made off towards the sea, but was followed by an old bird, headed off, and driven rather roughly up the beach, twice being actually knocked over with a blow from the parental wing.

Lapwing, Dotterel, Oystercatcher, and Turnstone.

Some British nesting Lapwings emigrate to Southern Europe, others merely leave the nesting area, generally moving south, or west to Ireland, but occasionally for a short distance north; but in many localities the favoured fields are never deserted, for winter visitors or passage migrants replace the departing summer residents. Frost or heavy snow drives the birds west, and often in winter there is weather immigration from abroad. Before the end of February some are back fixing territory, and wintering birds begin to depart in March. Some light on the age attained by the Lapwing is thrown by the recovery of a bird marked in Aberdeenshire as a nestling in 1912; it was caught in Ireland in 1924. The foot showed no trace of abrasion!

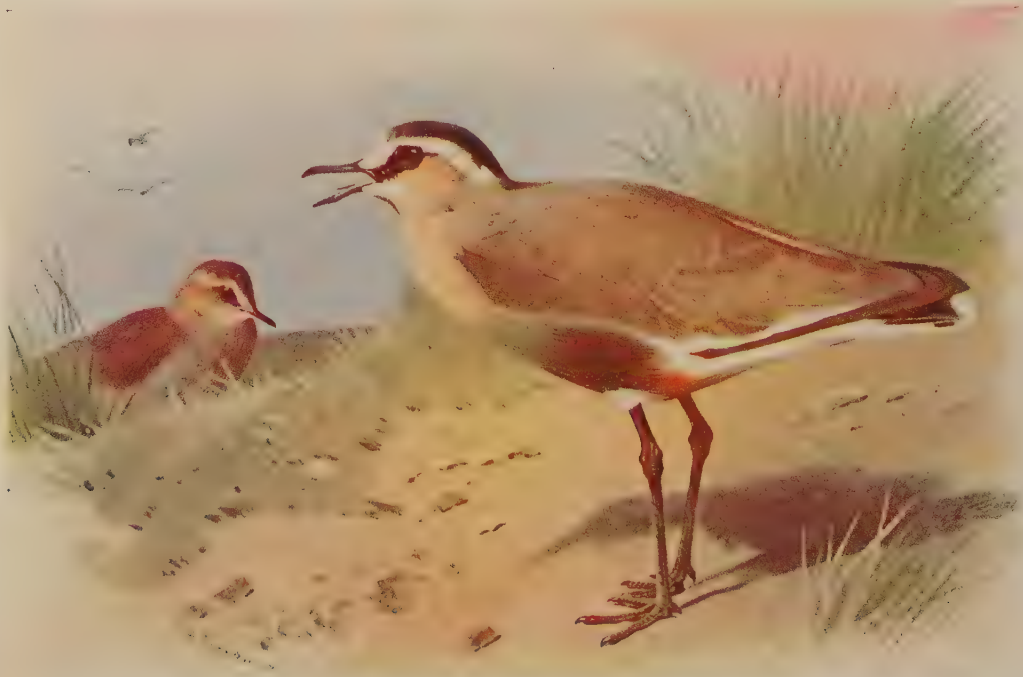
The Dotterel nests in Northern Europe and Asia and winters in Africa. A few pairs are summer residents in Cumberland and Scotland, arriving, as a rule, late in April or not until May, and returning south in August or September. Passage migration is in May and June, and in autumn even until late in October. These passage birds halt in certain favoured

spots, and Mr. F. W. Holder usually sees the birds on one of their Lancashire resting-places about the second week in May.

As resident, passage migrant, or winter visitor the Oystercatcher is always with us. The flocks move from place to place so frequently, that it is not easy to say which are the normal dates for passage, but there is a general southward movement in autumn. The Turnstone nests in the Baltic—Mr. Atkinson's photograph (Plate 47) was obtained on Oland—but so far it has not been proved to nest in our Islands, even in the Shetlands; nevertheless it is always present on all suitable coasts, summering of small parties being a regular habit. It may be a passage bird, but it is certainly an abundant winter visitor, arriving from July to November, and leaving in spring from March onwards.

The Sociable Plover (Plate 86) is one of the puzzling wanderers to Britain, for its home is in South-Eastern Europe or Western Asia; on three occasions in spring small parties have reached the South Coast, and single birds have been obtained in autumn in Lancashire and Ireland.

The Lapwing can adapt itself to circumstances, for on wet ground in the Broads Mr. J. Vincent showed me a nest made of reed-blades which might have been mistaken for a Moorhen's, and he told me that these large nests were common where the ground was liable to flood. The nest of the Dotterel (Plate 87) was photographed by Mrs. Brindley (106) on the Yenesei. In Britain the bird breeds on high hills, stony and barren, and though she found Dotterels occasionally nesting in riverside marshes, most of the birds used the highest ground on the tundra. The birds were as tame as they are with us, but when driven from the nest employed the usual plover artifices to attract attention, ceasing them, however, immediately they found that the ruse was unsuccessful. She describes one bird's performance, and says that first "she threw herself on



3 *Pl.* 86. *O* 208.

Sociable Plover. (pp. 208, 291).

3 *Pl.* 87.

Dotterel on nest. (pp. 208, 291).

her breast and lay as if crucified," which is what I saw a Golden Plover do in Shetland. The Dotterel, she found, was sociable in its nesting habits, as it is when travelling in " trips."

In Series II., p. 202, I described the courtship grouping of amorous Oystercatchers, but later observations make me modify the statement, for at these gatherings the birds do not always stand, but dance round with lowered bills trilling a rolling chorus. I watched this dance and listened to the song in Wales on September 19th, so that it may not always have nuptial significance; indeed, Prof. J. S. Huxley's (107) careful and detailed observations on the Oystercatcher in Holland confirm this, for he says that the piping, trill, and dance " can play a number of different rôles in the bird's emotional life." As in most species the behaviour at the nest varies individually, but as a rule the bird slips quietly away, leaving the eggs to be protected by their colour and environment. One bird I watched crept low, taking advantage of hollows in the rocks, but frequently peeped over a rock to see what I was doing, yet when a Herring-Gull passed the bird rose and gave chase and, so far as I could see, struck the Gull three or four times, causing it to swerve and call in alarm. Wary at all times, the Oystercatcher rests rather than sleeps with one eye open; I watched one that was standing on a rock with its bill tucked in its scapulars, slowly revolving, first to one side and then to the other without moving its foot, so as to keep a constant view of its surroundings with its one open eye.

It is frequently asserted that the bird is called the Oystercatcher because it does not eat oysters, but Dr. J. M. Dewar (108), after many experiments with birds in an aviary, proved that it can and does open small oysters, and that the habit, which has long been known in America, is infrequent in Britain because the oyster appears to have changed its location.

Mr. A. H. P. Wilkes (109) found that the Turnstone in Spitz-

bergen was, like the Oystercatcher, bold in defence of its nest whenever any other bird approached, even driving away the Arctic Skua.

One habit of the Lapwing I have often observed but cannot explain. When a flock is passing over a large sheet of water, individual birds will, one after another, make steep diagonal dives towards the water, often turning and twisting like a "shooting" Rook; they do not descend quite to the surface, but bank smartly, and the whole flock will turn and recross the lake again and again, whilst a few birds repeat the performance.

Miss G. M. Hall called my attention to the orange, not chestnut, on some Turnstones that she saw in breeding dress. In my description of the bird I hesitated to use the word "orange," because I could find it neither in any book nor detect it in the skins that I examined, but I quite agree that the impression given by a male in nuptial plumage, if seen in sunlight, is orange. Mr. Wilkes, speaking of nesting birds, says, "the brighter colours of the cock are most noticeable, especially the orange." Miss M. Garnett tells me that the dusky tip on the bill of the young Oystercatcher is retained until the end of the first winter, and wonders if the bills of mature birds are dusky at the tip in winter, as she found this in a mature female which was moulting in to winter dress.

Family LARIDÆ. The Gulls.

Many of our resident Gulls are so nomadic that their migrations have not been satisfactorily worked out; indeed, it is not proved if our Herring-Gulls actually leave our seas and if their numbers are augmented by passage birds. The Common Gull, slowly extending its breeding range southward from Scotland, is, however, an abundant winter visitor and passage migrant, for many birds ringed on the Continent have been

3 *Pl.* 88. Golden Plover at nest. (pp. 204, 290). *O* 210.

3 *Pl.* 89.

Bartram's Sandpiper. (pp 194, 288).

O 211.

obtained in Britain. That there is a marked passage, perhaps only of Scottish Herring-Gulls, I am convinced, for the numbers seen on both coasts in autumn are sometimes immense. On the Lancashire coast there is decided increase in August, and on September 23rd Canon C. E. Raven and I saw huge numbers of Gulls along the shore near Southport, and though several species were represented, fully eighty per cent. were mature or immature Herring-Gulls.

Prof. A. L. Thompson (110) concluded, after investigating the records of recovered ringed Herring-Gulls, that the bird has no true migratory paths, and shows "no special regularity with regard to dates or direction, moving north as well as south in autumn." The greatest distances travelled were little over 600 miles, the farthest points reached by Scottish birds were Waterford, Monmouth, Heligoland, and Calais. Danish records confirm the idea of a dispersal rather than route migration.

It is supposed rather than proved that the British Lesser Black-backed Gull is a summer resident which exceptionally winters, and that the winter visitors and passage migrants are of the Northern race. British ringed birds have been recovered in the Peninsula and Mediterranean, and some travel along the west coast of Africa; one bird was recovered in Morocco, having in three and a half months travelled some 2000 miles, and another was reported from Senegal. Many of these birds travel overland, halting at various waters and sewage-farms, but the largest migrating streams are coastwise, and though there is no clear indication of passage in the Great Black-backed Gull, the two species often travel together or at the same time. Actual records of the occurrence of the Northern Lesser Black-back are so few that we can only guess that it is a regular winter visitor and passage bird.

Prof. A. L. Thompson (110), after emphasising the general southward movement in autumn of the Lesser Black-backed

Gull along the Atlantic seaboard, finds indication that Baltic birds move either westward or overland southward, some reaching the Eastern Mediterranean. There are records of ringed birds from South Italy, Servia, and the Nile Delta, as well as others in inland Germany. An Oland bird was found in Essex, and two marked in the Færoes in Portugal and Morocco respectively.

The statement that the British birds arrive from February onwards and leave in August or later is not sufficient. I find that spring arrival and passage begins, as a rule, towards the end of March and lasts until late in May, and birds seen earlier may be winterers of either form, for it is not so easy as one would imagine to distinguish light from dark backed birds in the field. On the Norfolk coast, one year, I saw no Lesser Black-backs until April 26th, but passage continued until late in May, the most decided northward movement being on May 2nd, and this corresponded with the inland and West Coast passage that year. Southward movements may begin towards the end of July, but it is not until the end of September or early in October that I have noticed the most decided migrations. On October 6th and for a day or two later, I saw on the Yorkshire coast an immense passage and immigration of both Lesser and Greater Black-backs, the smaller bird greatly predominating. The birds passed steadily all day long, sometimes in twos or threes, sometimes in parties of fifty or a hundred, these larger packs flying in V formation. Many arrived directly off sea, coming from the north-east, but others were coasting south. I calculated that for several hours they passed at the rate of 3000 an hour. All Lesser Black-backs do not go south, for a bird ringed in Westmorland was found in the following September in Norway.

Mr. W. C. Tait (111) shows that our birds from east or west reach Portugal, some to winter there, though doubtless others go farther south. Out of fifty-three recoveries in Portugal

(212)

3 *Pl.* 91. *P* 213.

Glaucous Gull. (pp. 214, 292).

thirty-three had been ringed on the Farnes and seventeen in Westmorland. The other three were from Ravenglass in Cumberland, the Scilly Islands, and Lubeck in Germany. The absence of records in Portugal of ringed Scandinavian Gulls of this species or of birds of the northern form from other countries does not, as might be imagined, imply that the dark-backed race migrates no further south than Britain, for it is well known in Portugal as a winter visitor.

Compared with the analysis of recoveries of Lesser Black-backs Mr. Tait's result with ringed Black-headed Gulls is most interesting. It is evident from ringing that some of our home-bred Black-heads remain all winter and that some emigrate in autumn ; they have been found in France, Portugal, and the Azores as well as in Holland. Numbers of birds ringed on the Continent—Germany, Denmark, the Baltic, Holland, and even Austria—have been recovered in England, in inland as well as coastal localities. It appears, however, that large numbers of Northern European birds travel south by river or other overland routes, but the maps of these routes or supposed routes indicate a certain amount of guesswork, and much variability of habit. Mr. Tait records thirty-seven birds recovered in Portugal ; of these twelve were ringed in Holland, ten in North Germany, three in Denmark, and five in England (Cumberland, Cheshire, and Dorset). We can guess that these birds travelled *viâ* the west coast of France, but by what route did three from Bavaria and four from Bohemia reach the Portuguese shores ?

With us the Kittiwake is a summer resident and winter visitor, and may also be a passage bird, but it is a great wanderer in winter, venturing farther out to sea than most of our Gulls. Mr. D. G. Garnett (38) noted it passing south and east in autumn when he was between 200 and 350 miles south-west of Plymouth. For long it was suspected that Kittiwakes might cross the Atlantic, but this was not proved until August, 1924,

when a bird ringed on the Farnes in June, 1923, was recovered in Newfoundland. Another Farnes bird was shot in Labrador.

The Glaucous Gull (Plates 91, 120) and Iceland Gull (Plate 93) are winter visitors, varying in numbers in different years, both nesting in the Arctic, and the former in Iceland, where the bird which is called after that island is only a winter visitor; they are most frequent in the Shetlands, where the pictures were obtained, but have occurred even on our southern coasts. The Little and Sabine's Gulls are irregular autumn and winter visitors from North-East Europe and Siberia; the Little Gull at times occurs in considerable numbers and remains until summer. In 1923 several were noticed. On June 17th Miss E. L. Turner and I watched one at Hickling. We first noticed it flying with Black-heads at the far end of the Broad by its blue appearance against the dark trees, and by its shorter wings and small size when alongside the commoner bird. Later it flew with desultory flight close to our point of observation, occasionally swooping towards the water like a Black Tern, and we then saw that it was a mature bird with full black head. On June 26th we found an immature bird at Cley, and in the autumn Mr. F. W. Holder saw one on the marine lake at Southport on September 10th, and two days later I watched one on the Mersey in Liverpool. In 1924 Col. H. W. Madoc saw a Little Gull in the Isle of Man on June 30th.

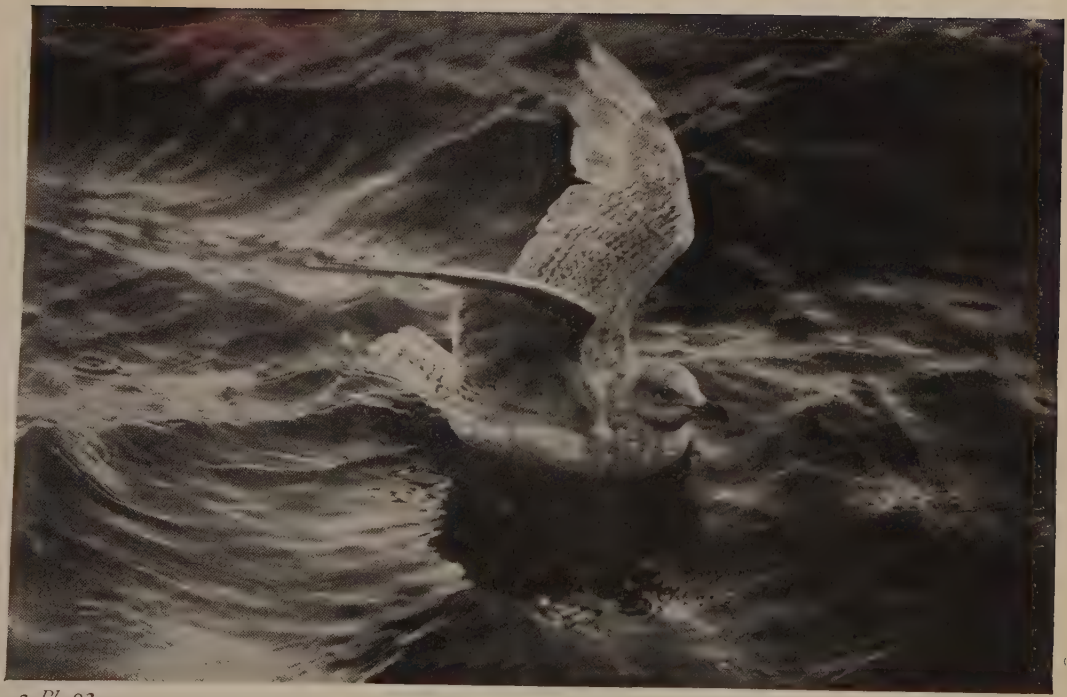
The Ivory-Gull is another irregular visitor from the Arctic which has appeared as late as June; Ross's Gull (Plate 92) has occurred once, and the Arctic American Bonaparte's Gull (Plate 95) on a few occasions.

Two Gulls have wandered from the Eastern Mediterranean, and a third may have the same origin. The Mediterranean Black-headed Gull (Plate 96) and the Great Black-headed Gull have been identified as visitors, the latter only twice. Mr. Witherby examined the only specimen of the Yellow-legged

3 W. 92.

Ross's Gull. (pp. 214, 292).

P 214.



3 *Pl.* 93.

Iceland Gull. Immature. (pp. 214, 292).

P 215.

Herring-Gull which has been obtained, and thinks that it is the North European race, not the Mediterranean form. Three other birds have been seen, one in Fair Island.

Col. Madoc and I found the mature Yellow-legged Herring-Gulls in the south of France very easy to distinguish, but the immature birds did not seem to me to be at all like immature Herring-Gulls of approximately the same age.

Most Gulls enjoy bathing in fresh water; in the Shetlands large numbers of Common Gulls came daily to Loch Spiggie, and we found them in all the small lochs. In Unst there was a continuous double stream of Kittiwakes between Burra Firth and Loch of Cliff; the birds came down the Firth, crossed to the Loch, splashed and preened for a few minutes, and then returned to the sea; at any moment there were several hundreds in the bathing crowd, and hundreds arriving and departing.

These Kittiwakes flew straight and with purpose, but at sea they swing along with easy flight, not unlike that of the Fulmar. When following a steamer they do not drift like the Herring-Gulls, but beat up over the stern into the wind, then take a long oblique downward swoop, turning their grey backs towards the wind, until well forward, when they bank smartly, showing their white breasts, turn, and sweep back with motionless outstretched wings; they cover more than double the distance flown by the Herring-Gulls.

The wail of annoyance rather than alarm cry of the Common Gull near its nest is shriller and less emphatic than that of other Gulls, and when it is specially anxious it repeats a rather feeble squeak.

I have seen numbers of Lesser Black-backs, when feeding along the tide-line, shoot almost vertically up for a few feet, hover whilst they scanned the incoming waves, and drop to secure any morsel that they have seen. Black-headed Gulls,

at any rate immature birds, apparently play on the wing. I watched a party over a Cheshire mere, and every few moments a bird would stoop steeply, often after taking what appeared to be an aerial somersault, turn or twist before it reached the water, and rise again to join the others. The birds seemed to loop the loop, and often plunged with many twists and turns at their companions, but they were neither fighting nor feeding.

Mr. F. A. Montague (112) visited a nesting colony of Ivory-Gulls in Spitzbergen, "situated on a 150-foot cliff of black dolerite, at the top of a steep 1000-foot slope up from the shore." Over a hundred pairs were nesting near the top, and below were Mandt's Guillemots and Kittiwakes; the nests were as a rule on wider ledges than those used by Kittiwakes. The down of the young was at first greyish-white, but later with black tips and spots, but these are reduced as the birds grow. He tells me that the bird is a great scavenger, though it seldom enters the water, and confirms the opinion of Mr. W. H. Riddell that he saw one, a pure white Gull about the size of a Common Gull, hovering over the corpse of a Teal in Liverpool Bay on January 4th, 1925.

The bills of young Common Gulls, when the feathers are just appearing, are black, horn at the tips; their legs are a light slate tinged with pink, and their irides brown. Miss M. Garnett has shown me a series of drawings of immature birds and mature birds in winter, which indicate considerable differences from the colours of the soft parts of adult birds in summer. The bill is at first tipped with black, and the base has, apparently, a fleshy tinge. The colour of the inside of the mouth appears to vary from whitish to orange, and, if she is correct about her ages, not to have a regular sequence of change. She also tells me that the tip of the bill of the Black-headed Gull in its first winter is black.

3 *Pt.* 94. *P* 216.

Black Tern at nest. (pp. 218, 293).

3 *Pl.* 95.

Bonaparte's Gull. (pp. 214, 292).

P 217.

The Terns.

The Common, Arctic, Sandwich, Roseate, and Little Terns are summer residents, and probably all also occur on passage. The Common Tern occasionally remains all winter. As a rule the Sandwich Tern is the first to appear, coming towards the end of March ; it moves south in September. On passage between Northern Europe and Africa it appears on our shores in April and May, and between the end of July and October ; West Coast haunts are not often reached until the middle of April. The Common and Arctic Terns, although seen occasionally in March or even February, normally arrive between the middle and end of April, and leave between July and October, though many remain in inshore waters long after the young have left the breeding-ground. I have, however, cruised in the Irish Sea in the last week of September without seeing a single Tern of any species. Passage reaches its height in May and August.

All three—Sandwich, Common, and Arctic—are long-distance travellers, sometimes wintering at the Cape ; the Arctic Tern, which breeds as far north as lat. 75°, has been found wintering in Antarctic seas. Common Terns ringed in Germany and Sweden have been found in South Africa, but an even more interesting record is of a bird " banded " in Maine, U.S.A., in 1913, which was found dead in the Niger Delta in August, 1917.

A Sandwich Tern, ringed on the Farnes as a nestling in 1919, was found eighty miles north of Cape Town in August, 1925. Naturally we wonder on what date this bird left England, or had it been all our summer in South Africa ?

One result of ringing is the abundant evidence that most young birds return to the place of birth, but a Sandwich Tern, ringed as a nestling in 1914 on the Farnes, was found dead five

years later, in July, 1919, at Ravenglass in Cumberland. On a Lancashire ternery in July I saw a Common Tern in first summer dress, with a broad white, almost unspotted forehead, a short tail, a sooty mark from eye to crown, and dark grey tips to primaries and streamers ; it was flying with the nesting birds, and seemed almost as concerned by our presence as those which had young. Mr. F. W. Holder, who knows this ternery well, says that birds in this second-year dress are rare on the shore and rarer still on the ternery, and he agrees with me in thinking that many may not leave winter quarters until their third spring. It is interesting to note that a bird ringed in Germany in July, 1914, was recovered in South Africa on July 8th, 1915.

The Roseate and Little Terns do not, as a rule, arrive until the end of April, and passage of the latter, at any rate, is noticeable on inland waters in April and May, and from the end of July until the end of September. The Little, Common, and Arctic Terns travel overland as well as coastwise, but the Sandwich Tern is infrequent inland. More Terns pass in autumn—July and August—than in spring, and many of these cross-country migrants are immature. One of the largest West Coast autumnal movements of Common and Arctic Terns that I have a note of was so early as July 23rd.

The Black Tern is a passage migrant between mid-April and the end of June, and from the middle of July to the end of September. It nests (Plate 94) in Holland, Denmark, and the Baltic, but not far north, and naturally passage birds are more abundant in our southern and eastern counties than in more westerly localities. The suggestion, however, that it is rare or irregular in the West, at any rate from Lancashire southward, is not borne out by my records for the last few years. In the last fifteen years 134 Black Terns were observed by my personal friends or by me on various inland waters and coastal marshes in Lancashire, Cheshire, North Derbyshire, and Stafford, and

3 IV. 96.

Mediterranean Black-headed Gull. (pp. 214, 292).

P 218.

3 *Pl.* 97. **Sandwich Terns displaying.** (pp. 222, 293). *P* 219.

these only during casual visits; sixty-four of these were in spring on dates ranging from April 18th to May 16th. The autumn passages, with one exception on July 6th, were between July 31st and October 6th. These observations are from ten localities; the observers number about a dozen. Considering the numbers of suitable waters in these counties, and the fact that no water could be watched day after day, we may safely affirm that the Black Tern passes through these north-western counties *regularly* in spring and autumn. On several occasions birds were seen on the same day on waters at considerable distances apart, indicating a broad front passage. Guessing that these birds are nesting in Holland, Denmark, and the Baltic, and realising that though regular on passage in Yorkshire, but only occasionally seen farther north or in Scotland, we may conclude that the spring migrants travel through England or *viâ* the Welsh coast, and across to the shores of the North Sea. In autumn Black Terns often travel singly or in twos or threes, sometimes in company with marine Terns, but occasionally in spring the numbers are larger. Thus on April 18th, 1914, twenty arrived from the west at one Cheshire mere, and after staying a short time departed towards the south-east, and on May 6th, 1916, twelve passed from west to east over another water, followed next day by seven more, and three on a water some miles further north. A south-east course would enable them to pass round the higher Peak hills, and reach the Humber by the Trent Valley, or if they continued their line of flight, the Wash and the shorter passage to the Continent from the Norfolk coast.

The White-winged Black Tern presents a more difficult problem, for its breeding haunts are in South-East Europe, and yet it occurs frequently on the South and East Coasts, usually in April and May, and is a recognised bird of passage in Norfolk; it has been noted on perhaps three occasions in autumn or winter. Its route from winter quarters to summer

haunts must, in some cases, be circuitous. The Whiskered Tern (Plate 100) is much rarer, having been recorded less than a score of times, usually in the southern counties, but once in Ireland, and once in Scotland (Dumfries); the dates range from May to September, and considering that it is a southern European and African species it is probably a wanderer rather than migrant when it comes north. On July 8th, 1922, after a south-west gale, Capt. A. W. Boyd, who knew the bird in Egypt, saw one with Arctic Terns on a Cheshire mere, and on the next four days Mr. R. M. Garnett, Dr. C. Cairnie, and I watched it at intervals. We all noted its salient characters —red feet and bill, dark grey upper parts and black cap, and sooty belly and flanks, and also that on the under wing, near the carpal joint, there was a distinct dark triangular patch. No such mark shows on any skins that I have examined, and Mr. Witherby, commenting on Capt. Boyd's note, says that the Whiskered Tern "does not in any plumage have a dark mark on the under side of the wing." He would have been wise to have added "normally," for we all four saw and were particularly interested in this abnormal mark.

The Caspian Tern (Plate 99) and the Gull-billed Tern nest in Europe as far north as southern Sweden and the Baltic, and winter in Africa; both are rare passage migrants, from spring to autumn. We saw Caspians in the Bay of Biscay in October, and noted the strong gull-like flight. The Sooty Tern (Plate 103) is a trans-Atlantic visitor, which nests in or about the Gulf of Mexico and wanders in winter; it has appeared under a dozen times in various parts of England, and sometimes at a distance from the coast.

In 1923 and 1924 I visited the Norfolk terneries, and found that the Sandwich Terns were not, as at Ravenglass and Walney, on the dunes, but were in various situations on more level ground. Some were on marshy islets, some on pebble ridges,

especially amongst *Arenaria*, but many on the sandy ridges where blown sand had lodged round small patches of marram or purslane. The nests, or single eggs on the bare sand, were grouped, a dozen or more close together, and the sociable habits of the bird showed in the way in which they collected round these small colonies or, for various reasons, gathered on the beach at the water's edge. Dark eggs were almost as plentiful as those with the normal light ground, and the freshly emerged young showed great variation; one bird was almost white, having few freckles or specks, but another was so closely speckled that it appeared almost self grey. At Blakeney and Cley, late in June, large numbers of eggs were destroyed in rather a mysterious way: they were punctured apparently by a single peck but the contents were not sucked. I spent a long time striving to detect the culprit, and concluded that the damage was caused by Terns, but it was not until later that I found that the Common Tern was probably responsible; the watcher at Ravenglass told Mr. F. B. D. Thorp that he was obliged to stop photography because when the Sandwich Terns left the nest the Common Terns pecked the eggs. When Mr. Thorp was in his tent two Common Terns came and deliberately destroyed the two Sandwich eggs that he was photographing. It would appear that the Common Terns resent the presence of the larger bird, and that there is inter-specific struggle for territory.

The courtship behaviour of all shore Terns has much in common; it consists of posturing and the offering rather than the presentation of gifts of fish; but something more than the mere acceptance of these love-tokens is evidently demanded by the male bird, for he does not always allow the female to snatch it away. In the Sandwich Tern combined displays are common; all the males in the group, and probably the females also, will stand with heads stiffly erect, bill pointed skyward, and their ragged manes standing out from nape and

neck. Males will also posture before a single female (Plate 97), whilst she crouches, body depressed, wings slightly expanded at the carpals, but with the primaries crossed, usually below the uplifted tail. If all is well she accepts the proffered gift of a shining sand-eel or other small fish, and mating follows. The crouching bird, whether the male or female I am not sure, scrapes out little hollows—dummy nests—in the sand, and sometimes these are surrounded by scraps of dry seaweed or slips of driftwood, but are not permanent nests; indeed, many times before the eggs are laid these imitation or suggestion nests are obliterated by the blown sand. I saw one male Roseate Tern offer a fish three times to a female, but each time she snatched at it he withdrew; the fourth time, however, she gripped one end, and after a short tug-of-war wrested it from him and flew off triumphantly, followed by the baffled male, screaming his reproaches.

The Sandwich Terns, though noisy when their colonies were approached, were less demonstrative than the Common Terns, but there is much individuality in the courage of all Terns. When a Heron passed over the ternery the Sandwich Terns rose, but it was the Commons which drove the unwelcome bird away, attacking it with great ferocity, as they attacked a Short-eared Owl which we disturbed from the dunes. With the exception of the somewhat furtive egg-pecking the Common and Arctic Terns exhibited no animosity towards the Sandwich Terns, though they quarrelled amongst themselves; a Roseate Tern, however, attacked a Common Tern, and the two soared, screaming, their streamers dangling as they rose with backs towards the wind. Some of the Arctic Terns were particularly fierce when any one approached their nests; one bird stooped again and again with plaintive mewing calls, and though it did not strike, several times deliberately voided. Another visitor, however, approached this bird's nest without a hat and returned with two or three bleeding beak pits in his head.

3 *Pl.* 98. **Great Skua.** (pp. 224, 294). *P* 222.

3 *Pl.* 99.

Caspian Tern. (pp. 220, 292).

F 223.

When the young are hatched, old birds bringing in food run the gauntlet of those which are going out to fish, and are frequently robbed; one bird, assaulted by three would-be robbers, swallowed its fish and went off to catch another. I never saw any fish dropped during these attempts at aerial robbery, nor did I see a parent drop a fish before a young one; the food was passed direct to the beak of the young. One young bird, scarcely five inches long, disgorged a sand-eel of that length when I handled it. Another, when begging from an old bird that had no food to give it, danced with open mouth and waved wing-stumps before its indifferent parent.

The various calls of the Terns have meaning which is evidently understood. An alarm of anger rouses all near to join in the chase of an intruder; this was very noticeable when Harriers crossed the dunes. But the cat-like mew of the angry Arctic Tern was evidently a more personal note; it did not call others to aid it. A Little Tern was covering two young ones, when its mate arrived with food, hovered above the brooding bird, and called as it dropped. Immediately one young one ran from the parent and was fed; shortly afterwards a bird passed and called, apparently a similar note, but the other young one did not emerge for its share until the real parent arrived.

The Black Tern is as a rule silent in England, but in Holland they mobbed us with angry cries of *kleet*. The nests were on both firm ground and floating litter. The young, which had scanty white down round the eyes and red-tipped black bills, were fed with small fish. They took to the water when a day old, and ran nimbly over lily-pads.

In the Camargue Colonel H. W. Madoc and I saw a number of large Terns flying at a distance, and though too far off for identification I think that they were Gull-billed Terns. Mr. W. E. Glegg (113) found one colony of these birds on an island on an étang which contained from 70 to 100 pairs. Many

of the nests were on the mud, but others were in suæda or other bushes ; he found four nests containing four eggs, and four with exceptionally large clutches of five ; these he felt sure were the produce of single females.

I have already commented on the variation in colour of down and soft parts in all nestling Terns ; the chin mark is certainly not an age mark, for newly emerged young Common Terns had black, grey, or white chins. One bird, its wing feathers just appearing, had its bill reddish-yellow at the base, and the rest yellow with a black band across both mandibles ; its legs were fleshy. A Little Tern, a younger bird, had a black-tipped, pale pink bill and salmon-pink legs ; a newly hatched Sandwich Tern had a reddish-blue bill.

In the mature Common and Arctic Terns the bill is an unsafe guide, but as a rule the bill of the Arctic is blood-red, that of the Common coral-red. Mr. Holder tells me that though he has examined dead Arctic Terns with black-tipped bills, he has not met with one with black on the under mandible.

The Skuas.

The Great and Arctic Skuas are summer residents and passage migrants, though the former is perhaps, away from the Shetlands and Orkneys, a rare winter visitor. Buffon's Skua is a passage migrant from North Europe, and the Pomatorhine a winter visitor and passage migrant from very far north. All four are pelagic in winter, the Arctic ranging far south in the Atlantic.

In 1925 I visited several Shetland colonies of Great and Arctic Skuas, and one of the first things that I noticed was that the Great Skua (Plate 98) is like the Arctic (Plate 52) decidedly dimorphic. Miss F Pitt (114) noticed the great difference in the shade of brown, but some birds are distinctly umber and others almost yellow. The young in down were

P 224.

3 Pl. 100

Whiskered Tern. (pp. 220, 293).

3 *Pl.* 101.

Great Skua, nestlings. (pp. 225, 294).

P 225.

buffish-sepia in colour, not unlike the brown wool of some of the small Shetland sheep ; they were darker, like the old birds, on the back. Their legs and bills were pale lead-grey, their irides hazel. On Noss, a fortnight later, the birds were growing feathers, and were much darker (Plate 101).

Bonxies (Great Skuas) frequently followed the steamer in Shetland waters. They flew with steady, strong, but easy flight amongst the crowd of attendant Gulls, but made no attempt to drop for thrown-out food. The Gulls paid little attention to them, until one, and often two Skuas, singled out a possible victim, at which they savagely swooped. The Gull rose and dodged, and the Skuas followed ; the three ascended, the Skuas threatening with fierce cries, and striking at the screaming, terror-stricken Gull with wings or feet, until the bird disgorged. Then one Skua stooped, caught the disgorged food, and planed to the water to enjoy it. Though left far behind it had no difficulty in catching up with the steamer when it had finished the loot. Arctic Skuas did not follow with the larger Gulls, but we saw many bullying Common Gulls and Terns.

Colonies of the two species were on the same hills, but the Bonxies kept to the higher ground, and where the nesting area of the two overlapped, which it usually did, the smaller birds mobbed the larger ones. We reached Scootie (Arctic Skua) ground first, and were at once greeted by a clamour of feline calls. The cry sounded to me like *mee-er* or *mee-ow*, but there were other notes, including a querulous *tee-eerr*. When disputing amongst themselves, apparently a frequent occupation, this call became tri-syllabic—*tee-dle-ur*, the two first notes shorter than the third. Nesting birds, in all directions, feigned disablement, crawling on their bellies, or lying on one side, with one or both wings feebly fanned ; all the time the bird squeaked dolefully. Some would deliberately fall over, pretend to rise, and fall again with a squeal, as if in pain,

the beak held wide open all the time. But when the nest was approached the behaviour was very different. The bird concerned rose and again and again stooped ferociously, passing close to our heads with a curious ripping sound, in addition to an angry call. This rip is evidently caused by some change in the position of the wing as the bird skims over, banking. The attack of the Bonxie is more nerve-shaking but less noisy. The nearer birds in the colony rise and wheel overhead with sharp barking cries—*aph*, *aph*, and sometimes with a *g* sound, but they do not usually stoop from above, but descend at a distance to about the level of one's head, and then come straight, with strong wing-beats, as if intending to strike. They drop their feet when a few yards away, but though many people have experienced a blow, every bird that attacked us rose just high enough to miss. There was the same though a louder rip as the bird skimmed over. The white on the wings is most noticeable when the Great Skuas rise, but is also very conspicuous in flight; it is not visible on the standing bird. It is present on the wing of the Arctic Skua, but shows more on dark than on light birds. The young of the Arctic that we saw were a darker brown than the young Bonxies, more seal-brown on the upper surface, but buff below; the down has the same soft, silky appearance; the leaden bills had black tips, and the legs were lead-blue, but the webs were pinkish and clearly veined. The irides of birds we examined were browner than those of the Great Skua.

The nests where there were well-grown young Bonxies were surrounded with herring bones, the vertebræ well picked; even when the young are running the nest is evidently the refectory. The herrings, doubtless, had been filched from Herring-Gulls. One Arctic Skua which we watched for some time had found a look-out on a rock in an inlet up which Arctic Terns were passing constantly, carrying food to their young. When a bird passed with a dangling fish it was attacked

3 *Pl.* 102. **Black Guillemots.** (pp. 227, 229, 235). *P* 226.

3 *Pl* 103.

Sooty Tern. (pp. 220, 293).

P 227.

and robbed, but one victim turned on its persecutor after it had lost its fish, and though so much smaller a bird, drove away the screaming Skua. Mr. Holder saw six Arctic Skuas on the beach near a Common Tern colony, and for an hour not a single Tern got through the cordon with its fish. I have watched this species attacking Waders, but the attack was evidently little more than bluff; at any rate, it brought the Skua no profit.

Family ALCIDÆ. The Auks.

With perhaps the exception of the Black Guillemot, the Rock Auks are pelagic in winter, though not as a rule frequenting seas at any great distance from land. In that there is a general southward movement they are distinctly migratory, although their wanderings do not always take them in this or any definite direction. Comparatively few Guillemots have been ringed, but young marked on Ailsa Craig have been reported in the following autumn or winter from Dover and North Spain, and one in spring, two years later, from Beer in Devon; on the other hand, one ringed at Bempton in July by Captain Boyd had travelled, by October, some 500 miles northward, for it was recovered at Farsund, in Norway. As it is only recently that the Northern and Southern Guillemots have been separated, the knowledge of the extent of their winter travels is slender. The breeding range of the Northern Guillemot includes the Orkneys and Shetlands, and this form has been found in winter so far south as Spain, but it appears to be the more numerous of the two round our Islands in winter. Indeed, when cruising in a trawler in the Irish Sea in the middle of September all of the Guillemots that we saw, with one exception, were dark birds, apparently of the Northern race.

The movements of Razorbills and Guillemots are difficult to interpret, for the birds travel in small parties to and from

favourite feeding-grounds. When watching migration on the north coast of Anglesey in May, there was little passing of birds in one direction which was not balanced by return in the other, until the middle of the month, but from the 14th to the 19th strings of Guillemots and Razorbills hurried west one after the other, the wings of the birds moving so rapidly that the body appeared to have a triangle above and below. They passed all day, not at any particular time, and not one per cent. went eastward. The direction of flight, considering the coastal configuration, puzzled me, for I could not imagine that the birds had reached Liverpool Bay from the east.

My idea is that these birds had been for days, if not months, feeding off the Welsh and Lancashire coast, and were heading in mid-May for their colonies. It is, of course, possible that they had already gathered at the cliffs where they breed, and had travelled eastward beyond my range of vision, but it was only on these few days that the movement was marked near shore.

The Black Guillemot, although leaving its haunts in autumn, is a rare wanderer south and is seldom washed up on our shores ; I hesitate to say if it goes far from its summer haunts. The Puffin, however, deserts its colonies early in autumn and does not return until spring, and it has been met with in winter at considerable distances from land. Brünnich's Guillemot (Plate 105) and the Little Auk breed in the Arctic, from Siberia to Greenland ; the first is a rare straggler on southward passage, but the Little Auk is almost regular in our seas between October and February, and as birds have been noticed as early as July and as late as June, it is not unlikely that a few occasionally remain all summer. At times its numbers are so great, especially after bad weather, as to suggest an invasion. It winters as far south as the African coast. The extinct Great Auk is figured on Plate 106.

3 *Pl.* 104.

Manx Shearwater. (pp. 232, 295).

P 228.

3 *M.* 105.

Brünnich's Guillemot—winter. (pp. 228, 229, 294).

Q 229.

Seebohm says that the Black Guillemot may be seen feeding after dusk. In the Shetlands, where we saw many scattered over the water (Plate 102), several birds used to feed in Lerwick Harbour close to the quays. From the hotel windows at midnight I could watch the bird swimming under water, following its course by the flicker of the two white wing-patches, for it swims with its wings when hunting. It dived, as a rule, with a little spout of water, kicked up by its red legs as it went under, and often was up again in ten to fifteen seconds; the longest dives that I timed did not exceed twenty-eight seconds.

In many parts—the Scilly Islands, for instance—the Great Black-backed Gulls are very destructive, killing and eating Guillemots, Puffins, and Shearwaters, but though in the Shetlands I found many nesting close to colonies of Auks and Puffins, I once only saw a Gull devouring a bird, and it may have been a dead body picked up from the water. In Shetland the form of Guillemot known as the Ringed Guillemot was comparatively abundant on the ledges with the normal bird, though it was impossible to estimate what proportion were so marked.

Mr. F. A. Montague (115) states that the main food of the Little Auk in Spitzbergen is a mysid which is found in the deeper waters of the bays. Mr. C. S. Elton, when on the same expedition, remarked that the birds were not gregarious when actually feeding, but when replete congregated in compact flocks for "company, conversation, and digestion." The West of Spitzbergen, at any rate, was deserted by the Auks at the beginning of September. Mr. Montague relates an incident which has bearing on the manner in which Rock Auks reach the sea when still unable to fly, for a Brünnich's Guillemot in down was seen to fall over 70 feet sheer to sloping scree, and then roll 150 feet more to the shore, where, when picked up, it was found to be "entirely undamaged."

Family THALASSIDROMIDÆ. The Petrels and Shearwaters.

All Petrels and Shearwaters are pelagic in winter, and some range far south. The Storm- and Leach's Petrel, Manx Shearwater, and Fulmar are summer residents, the others either regular, casual, or purely accidental visitors to our seas. The Storm-Petrel often remains near its breeding haunts until late in autumn, and this is hardly surprising, for incubation is long and development of the young bird slow; Mrs. A. Gordon (116) found some which would hardly be able to fly at the end of October. When these two species are met with inland it is apparently due to severe weather, but this is not so with the Manx Shearwater, for though many make south over the sea, numbers annually travel overland at the end of August or early in September. The route taken by these birds seems to be either south or south-east. Examination of my own records and comparison with the notes of occurrences recorded elsewhere show wonderful regularity in passage in early September, though there are many notes for October; it shows also that the birds do not follow any one route, as they have been found in places over a wide front. The return in spring seems to be by water; Dr. Ticehurst thought that they reached Bardsey from about the end of March.

The Fulmar also reaches its nesting haunts from March onwards, though I have one record for February. These nesting haunts are rapidly spreading southward. Birds laid on Rathlin Island in 1921, and eggs were first taken at Bempton in Yorkshire in 1922, when Dr. Long estimated that there were between fifteen and twenty pairs. In 1925 he found that the colony had greatly increased.

The Great and Sooty Shearwaters and Wilson's Petrel (Plate 113) are regular summer and autumn visitors from their

3 1/1 106.

Q 230.

Great Auk. (pp. 228, 294).

3 *Pl.* 107.

Fulmar on nest. (pp. 233, 296).

Q 231.

home in the Southern Hemisphere. The Great Shearwater' only known to nest in Tristan d'Acunha, is the most frequent visitor; it sometimes reaches Iceland and Greenland. I saw two off the east coast of Scotland on June 18th and a single bird in the Minch on July 16th. Colonel H. W. Madoc saw a few off the Land's End as late as November 3rd. The Sooty Shearwater is rarer, and only a few Wilson's Petrels have been recorded. The Black-browed Albatross, also from the South Atlantic, has been once noted.

The Petrels and Shearwaters whose home is on the islands in the North-East Atlantic or the Mediterranean are less regular visitors; the Western Mediterranean Shearwater, until lately confused with the Eastern form, is the most frequent, usually appearing off the South and East Coasts in October. The Mediterranean and the North Atlantic Great Shearwaters have been each recorded once. The Madeiran Little Shearwater (Plate 115) has occurred some eight times in spring and autumn, the Cape Verde form twice; the occurrences of Bulwer's Petrel (Plate 117) number half a dozen, the Madeiran Fork-tailed Petrel has been identified three times, and the Frigate Petrel (Plate 108) twice.

Colonel Madoc and I saw hundreds of Great Shearwaters in the Bay of Biscay in October; with them were some North Atlantic Greats, distinguished by their clouded cheeks and necks, a number of Sooty Shearwaters and a few Bulwer's Petrels. They were gathered above some attractive food, and rose, swinging past in long procession, to fresh feeding ground. One Wilson's Petrel, as big as Leach's Petrel, but with a square tail, passed close to the boat, paddling with its long legs.

The three remaining Petrels, which have each occurred once, and so far as we know once only, in the British Isles, are casual pelagic wanderers. The Capped Petrel, now believed to be extinct, nested until the end of the nineteenth century in the West Indies; it has also been recorded from France. But the

Collared Petrel (Plate 110) is a bird of the Pacific, and only one nesting locality is known of the Kermadec Petrel, the islands of this name which lie some 400 miles north-east of New Zealand. The bird shown on Plate 111 was picked up dead in April, 1908, in a field in Cheshire ; I saw and examined it in the flesh. We can only guess how it wandered, east or west, rounding Cape Horn or Cape Colony, and hopelessly and literally at sea, travelling north until it wandered or was drifted inland over Cheshire.

Judging from the numbers of Manx Shearwaters which frequent the eastern portion of the Irish Sea, there must be some very much larger colonies than are known, unless these birds travel great distances to feed. Practically every evening between the middle of May and well into August large numbers travel westward from Liverpool Bay or the Welsh coast, passing the Orme and the North Anglesey coast between 5 and 7 p.m. in May. Mr. R. W. Jones first pointed out to me the regularity of these passages, and from the middle of May in one year I watched the passage nightly for several days. The largest number that I saw was on May 19th, when 270 passed within sight in half an hour; they did not hurry but lolled along, looking like huge white-breasted Swifts as they swooped and careened. In Carnarvon Bay in July birds passed, flying south-west toward Brach-y-pwll and Bardsey with more direct and hurried flight ; they were travelling in small parties as late as I could see them ; they passed within a few yards of the boat up to 11 p.m. When we were sorting the contents of the trawl numbers alighted on the water, but only for a moment, keeping their wings held upright, and rising lightly with a single downward stroke. Occasionally, however, a bird would dive for a sinking morsel. When taken from the nesting hole by day the Shearwater is confused and frequently sprawls with outspread wings, as shown by Miss Best (Plate 104), but when allowed to

3 *Pl.* 108.

Frigate Petrel. (pp. 231, 295).

Q 232.

3 *Pl.* 109.

Manx Shearwater in down. (pp. 233, 295).

Q 233.

depart, though it cannot stand, it springs from the bent tarsi, and bumps down the slope, fluttering, until it reaches the edge of the cliff, when, instantly, floundering is changed to perfect aerial ease. The young in down (Plate 109) was photographed by Miss Best in the Scilly Isles.

Mrs. Gordon (116), when studying the breeding habits of the Storm-Petrel on a Hebridean island, found that the birds were active and noisy on dark, stormy, or misty nights, flying round in the darkness with weird calls in the same way as the Manx Shearwaters; on quiet nights she did not hear any, nor did I find that the Shearwaters were audibly active.

In 1925 I renewed my acquaintance with nesting Fulmars (Plate 107), and realised that the bird is even more decidedly yellowish-brown—less blue-grey—on the wings than I had remembered; young birds, evidently not breeding, were more blue. Fulmars passed or followed the boat from the Isle of May northward, and off Aberdeen they were very numerous, often flying with regular, strong wing-beats, and without the easy floating and careening flight so characteristic of this and many other Petrels. Further north, however, when the small *Earl of Zetland* was ploughing her way against a 25 to 30 m.p.h. wind, several swung to and fro across the bows in regular pendulum curves, their motionless wings in graceful swift-like crescents. The thick neck, the stout, short, yellowish bill, and the grey tail rendered them distinct from any Gulls which were their companions.

With the spread of the species the colonial habit has decreased; we saw no huge colonies similar to the one on St. Kilda, but scattered birds or small groups were nesting on suitable ledges amongst Herring-Gulls, Kittiwakes, and Guillemots in all parts of the Shetlands. The nests, usually little more than a hollow in the turf (Plate 107) were exceptionally decorated, and one bird was sitting on a mass of nesting material. Mr. H. Boase (117) gives an interesting account of

the courtship display of the Fulmar, describing in detail the various poses and antics of the amorous birds. When we first arrived most of the birds were covering eggs, and it was not until June 30th that we saw any of the white down-clad young birds, but it was quite evident that nuptial courtesies, very similar to the courtship displays, are continued during incubation. The sexes are so similar that I could not be sure which bird was sitting, but the behaviour suggested that the female was brooding and was constantly visited by the male. The visiting bird, presumably the male, was welcomed whenever he approached the ledge with repeated short calls—*eck*, *eck*, *eck*, uttered with the mouth wide open. Mr. E. Selous imagined that the birds open the mouth wide to exhibit the colour of the inside, and also that the female was resenting the advances of the male when she uttered this call; this was far from our impression. When the male alighted, very awkwardly in most cases, he waddled towards her on his tarsi, and was greeted with undoubted pleasure; the cries were more persistent, the beak held wide open for long periods. Squatting in front of her, he began to dip his head sideways, his throat visibly swollen; this head dipping or bowing was first to one side for several bows, and then to the other, the bill often touching or nearly touching the ground. The female did not respond by similar actions, as Mr. Boase says she does during display, but threw up her head again and again, opening wide her bill and evidently expecting something. Whether this was regurgitated food or squirted oil we could not be sure, but very suddenly the male advanced his bill to her open mouth, transferred something to her, and immediately turned and dropped from the ledge on open wing.

Mr. Boase comments on another action which interested me greatly. He says, "Apparently, the inability to stand on the toes makes landing a difficult matter for the Fulmar, and in many cases the birds simply sideslip and tumble upon the ledge.

3 *PL.* 110

Collared Petrel. (pp. 231, 296).

Q 234.

3 *Pl.* III.

Kermadec Petrel. (pp. 232, 296).

Q 235.

Time after time the birds will in turn attempt, whether in earnest or in play is not clear, to alight on some chosen spot, pausing in flight before the place selected with feet dangling, balancing the eddies in the upthrow of air with wings and tail, only to swoop once more to gather impetus and rise again to make another attempt." Probably he is right that this may be sport during courtship, for we saw many birds swoop up to the ledge, glance at the sitting bird, as if to make sure that all was well, and then swing over and glide out to sea once more; but we also saw the birds struggling to alight when the wind was blowing straight against the cliff face, for long unable to pierce the strong up-current. They stooped in pose, head well down, wings strongly bent at the angle, the primary tips pointing straight back, and with rolling adjustment of wings and tail strove to bore through the ascending air, but when lifted too high, they extended the bowed wings, heeled over, and swept out in a wide circle to make another effort. I concluded, from watching birds alight when the wind was from one side or the other, that it was when the upthrow was considerable that they found difficulty; at other times the alighting was hardly graceful—" sideslip " is expressive—but varied in its ease of accomplishment. The dangling legs were suddenly thrown forward, and though the bird usually managed to alight upon the whole length of the foot, it frequently fell forward on its breast; often it struck the ledge with the white breast.

This brings us to the question—can any of the Petrels walk on the toes? I think not, and believe that all the pictures in Saunders's " Manual," with the exception of the one by Mr. G. E. Lodge, are incorrect, as I fear are the pictures from Lilford of Leach's Petrel, the Sooty Shearwater, and the Fulmar in the background, on Plates 123, 124, and 126 in my own book, Series II. It must be remembered that until recently this fact was not realised, and that there was great

difficulty in drawing from the life, especially with birds which were nocturnal during the nesting season, or bred at a great distance away. The figure of the Storm-Petrel is, however, correct; I have seen this bird and Leach's running along the surface, paddling the toes in the waves. Few contrasts are greater than the awkward waddle of the Fulmar on land, and its perfect ease and marvellous grace on the wing.

Family COLYMBIDÆ. The Divers.

Comparatively few Black-throated Divers nest in the British Isles (Plate 116), but the bird is a regular winter visitor from late October until May, more frequent on the East than the West Coast, but not uncommon on passage off the Welsh coast and the Isle of Man. I have known the bird in Wales at the end of May, and seen it on the Norfolk coast on June 26th. The Red-throated Diver is far more abundant as a nesting species and is more of a passage migrant than winter visitor. It arrives off our coasts towards the end of August in autumn, and is moving north early in March; passage continues until well into May. Off the Welsh coast Mr. R. W. Jones noted a considerable southward passage on August 24th.

The Great Northern Diver is a winter visitor, remaining off our shores or visiting inland waters from September until May. It nests in eastern North America, Greenland, and Iceland, and some winter as far south as the Mediterranean. The White-billed Northern Diver (Plate 118) breeds in North-eastern Siberia, and is a very much rarer visitor; indeed, it is not certain if it has occurred more than twice, for Mr. Witherby found that several birds originally recorded as this species are really Great Northerns in winter dress. The Great Northern may nest in the Shetlands, as it is often round these islands all summer, but this has never been proved. On July 26th, 1925, I saw two in one of the voes, one a mature bird in summer plumage. The

other was young, with white cheeks and without spots on the mantle, unlike the bird photographed in Raasay on May 29th, by Dr. Heatherley (Plate 112). The bill of the young Shetland bird was dark on the culmen, but the under mandible and the rest of the upper were horn-coloured. Miss M. Garnett tells me that the feet of immature birds of both species which she examined were bluish or greenish-white with dark or black markings, but that in life the blood-vessels in the webs made them appear salmon-pink. The irides of the Black-throated were dark brown, those of the Great Northern a lighter shade

The Red-throated Diver favours small peaty lochs, even at a high elevation, though I have found it nesting almost at sea-level in the Hebrides. In Shetland we found young birds just out of the eggs—the egg-shells, which are not removed, had not blown away. Their down was dark grey, and in front of and above the eye was a small white patch; their short, triangular bills were blue, and there was no noticeable "stop" between culmen and forehead. They swam and dived well, swimming out when called by the old birds, both of which remained on the water, submerging themselves until only the head and neck, down to the red throat, were visible. The call to the young was a plaintive mew with various inflections—*ye-oo*, *meew*, *mee-ow*. This call is not mentioned in most text-books, but is referred to by Dr. G. T. van Oordt and Prof. Huxley (118) in their articles about their experiences with one daring rather than tame bird in Spitzbergen. The bird photographed by Miss Best (Plate 114) is turning the eggs.

Family PODICIPIDÆ. The Grebes.

Four of the five Grebes now nest in the British Isles, though two are local and very rare; all are winter visitors or passage migrants.

Some of our nesting Great Crested Grebes may go south in autumn, but they are irregular in their habits. In most places the birds repair to salt water in November and return in February, but in Cheshire, where I know the bird best, a few remain all winter in most years; migratory movements seem to be regulated by caprice rather than by season. I have known every Grebe to have left a mere before the end of November, but by December 10th several were on the water. Early February is the usual time for the birds to return, and immediately courtship begins, but in most years there is a decided increase in March, beginning about the second week. This increase may be due to the return of birds which have been to distant winter quarters, or to passage. Fluctuations in numbers in September and October also suggest passage, especially as some of these birds are sociable on the water; I have known thirty birds present at the end of October to be reduced to three by November 3rd. Further evidence of passage is the presence of birds on the coast in May, even as late as the end of June, when all the residents have settled down; in one such party, fifteen in all, two birds were displaying on May 13th. Little Grebes also seek tidal waters in autumn, and during the winter their numbers fluctuate on inland waters, but not so noticeably as with the larger species.

The Red-necked Grebe is an irregular winter visitor from September onwards, though I have no note of it on Cheshire waters before the beginning of November. The Black-necked Grebe usually appears between the second week in March and the middle of April, and in autumn early in October; birds in late November in Cheshire, and in Cumberland early in December and in February, were probably winter visitors.

How long the Black-necked Grebe has been nesting in Ireland is not known, nor if it still does so occasionally or regularly, but in 1915 and 1918 young were obtained—in the latter case

3 *Pl.* 112. *Q* 238.

Great Northern Diver. Immature. (pp. 236, 297).

3 *Pl* 113.

Wilson's Petrel. (pp. 230, 295).

Q 239.

a whole family ruthlessly and stupidly wiped out—from two different localities.

The Slavonian Grebe, though sometimes visiting us in April, is a more usual visitor in January or February. It is known on passage in May and June, and from early September to late November.

Bill-fencing, part of the complicated nuptial performance, may be indulged in in autumn; not only have I seen mature Great Cresteds exchanging this courtesy in September, but birds of the year, perhaps playing at courtship; I saw one infant with a striped neck bring up weed and dangle it before another of the same age in exactly the same manner as an amorous adult bird. On April 26th, when *Sialis* was rising, I watched two Grebes diving superficially, and, so far as I could make out, feeding on the nymphs.

Dr. Heatherley, to whom I am indebted for the photograph (Plate 119) of the bird with elevated ear tufts, which was feeding the young one on its back with small fish and feathers, doubtless for digestive purposes, called my attention to the rapid decrease in area of the triangular vermilion patch on the head of the nestling Grebe. This patch was smaller on the second day, and much smaller on the fourth, than when the bird broke the shell.

Mr. A. D. Du Bois (119), describing the nesting habits of the Slavonian Grebe in America, tells that the eggs change colour very quickly from delicate blue-green to drab-buff; this change, he shows, is due to sun and exposure, and has nothing to do with the staining from the wet weed with which the eggs are covered.

In its Scottish haunts I watched the behaviour mentioned by Mr. Du Bois. The birds, when we were near the nests, swam close inshore, deliberately preening themselves, turning

over in the water so that the white underparts caught the eye. He believes this is a habit calculated to draw enemies from the nest, like feigned disability of Plovers and other birds.

Miss Garnett's drawings of the soft parts of immature and winter-killed Grebes show variation, and differ from the colours given for mature birds in summer, but the age of the examples examined is uncertain. On the whole, however, the winter bills are as a rule lighter, the immature legs and feet vary in the depth of green or grey, and the irides are more orange—less bright—than in summer.

Family RALLIDÆ. The Rails and Crake.

The Coot and Moorhen are always with us, though the former moves about in mobs in winter and many repair to tidal waters; the Moorhen has been noted as a spring migrant and may also be a passage bird. The Water-Rail is resident, also a winter visitor and regular passage migrant from March to May, and September to November. I have seen several birds that had been "wired" when on passage in late October, also one or two in April. The Corncrake is a summer resident and passage migrant; it arrives as a rule from the middle of April to the end of May, but there are several recorded arrivals in March, and a bird smashed against wires in Cheshire on April 5th. It begins to emigrate late in August, but many birds linger until November, and wintering is not unusual, even in northern counties. The Spotted Crake is a rare summer resident and passage migrant, coming from March to May, and leaving as a rule before November, but it has remained all winter. Baillon's and the Little Crake occur from time to time on migration between Central Europe and North Africa, and the Carolina Crake has, about half a dozen times, so far as we know, crossed the Atlantic. A young bird was captured on shipboard 100 miles west of Ireland.

3 *Pl.* 114. **Red-throated Diver turning the eggs.** (pp. 236, 297). *Q* 240.

3 *Pl.* 115.

Madeiran Little Shearwater. (pp. 231, 296)

Q 241

A Water-Rail that I examined in October had the legs reddish-brown, not greenish, and this, Miss Garnett tells me, was the colour in a bird she examined in winter.

Families COLUMBIDÆ and PTEROCLETIDÆ. Doves and Sand-Grouse.

The Rock-, Stock-, and Ring-Doves are residents, and the two last are winter visitors in varying numbers, and to some extent passage migrants. Immigrants from Scandinavia begin to arrive in September, and there are often large invasions of Ring-Doves in November. Emigrants or birds on passage leave from March onwards until May. In winter Stock-Doves are gregarious, often joining forces with Ring-Doves. Small flocks frequently visit sewage-farms in autumn, doubtless to feed on the abundant weed seeds ; I have seen them pecking at something on the slub of settling tanks in company with Lapwings, Redshanks, and Gulls.

The Turtle-Dove is a summer resident, and in Scotland, as far north as Shetland, a bird of double passage between Southern Scandinavia and North Africa. As a rule it is not until the end of April that Turtle-Doves reach our shores, although there are many instances of early immigration, even in February and March, and I saw a party of eight, apparently just arrived, on the Sussex shore on June 13th, though in most years all have reached us before the end of May. A late comer, the Turtle is also early in leaving us, departure beginning in August, and though there are records of the bird as late as December, in most years all have gone before September ends. Two Turtles ringed in England have been recovered in Portugal, both in September, one on the 5th of the month. Mr. W. C. Tait (111) gives some interesting details of the passage of Turtle-Doves in Portugal. Some apparently travel at night, for they are seen to strike the lantern on foggy nights, and in

the morning flocks may be found in woods which were unoccupied the previous day; but many move by day, usually between 5 a.m. and 9 a.m., coasting south in autumn, travelling a short distance inland from the actual shore. The favourable time is when an east or south-east anticyclonic wind is blowing, but a lightkeeper at Cape Roca told him that if the wind veers to the south the birds will return, flying south to north in autumn, evidently to wait for a more favourable wind. On the other hand, if the wind is in the north the birds vanish, but this may not mean that migration ceases, but that it is accelerated or that the birds take a more inland route. At the mouths of the Douro and Tagus south-bound birds will travel north-east for some distance before they cross to the south bank, and this is curious, because there is evidence that on several occasions birds have attempted the long sea crossing of the Bay of Biscay: both in spring and autumn Turtles have boarded steamers well out of sight of land. These birds may have been bound for or returning from either England or Ushant.

The Eastern Turtle-Dove, a rare straggler to Europe from its far eastern Asiatic home, has been once recorded in England, but such abnormal occurrences must surely be due to the inexperience of young birds.

Pallas's Sand-Grouse cannot be counted as a regular migrant; its occurrences in our Islands are due to sporadic irruptions or invasions, which, as birds attempt to nest, are abortive efforts of an overabundant population to find new ground and colonise far to the west of the ordinary breeding area.

Families PHASIANIDÆ and TETRAONIDÆ.
Game Birds.

The Pheasant, Partridge, and Red-legged Partridge are maintained under more or less artificial conditions, and are permitted by man or encouraged to be permanent residents.

3 *H.* 116. Q 242.

Black-throated Diver on nest. (pp. 236, 297).

3 *Pl.* 117.

Bulwer's Petrel. (pp 231, 296).

Q 243.

The Red-leg occasionally shows a disposition to wander and some migratory instinct ; from time to time small parties are met with on the South-East and East Coasts under circumstances which suggest attempted immigration, but there is no regular migration. How far these birds can fly is uncertain, but Mr. W. J. Clarke (120) records that late in March and early in April 1922 a number were noticed near Scarborough and Filey in Yorkshire, where the bird is not common, and that two were captured in the town and at least eight were actually seen arriving oversea from the east, one falling into the sea close to land, for they were undoubtedly exhausted. Where these birds came from is uncertain, but it is possible that they were not immigrants from the Continent, but wanderers out to sea from the Norfolk or Lincolnshire coasts.

The Quail differs from its near allies, for it is a summer visitor, though the numbers which reach us vary greatly in different years, and the times of arrival and departure are irregular, and not infrequently birds have remained all winter.

All the remaining Game Birds, the various Grouse, Capercaillie, and Ptarmigan, are not, as we understand the word, migratory, though they may shift their ground in order to seek food or attempt to extend their breeding area. Red Grouse from time to time cross the sea to islands which are, as a rule, in sight of the place of departure, but the small party which took refuge on a boat 20 miles east of Lerwick had, almost certainly, lost their way, for they were flying in a fog.

Mr. H. S. Gladstone (121) shows that the Ring-necked Pheasant was known as an aviary bird prior to 1783, and became a denizen of our woods somewhere about that date. He also reproduces a picture of a Pheasant, which appears as a marginal illumination of the Louterell Psalter, *circa* 1340.

SPECIES AND SUB-SPECIES ADDED TO THE B.O.U. LIST SINCE 1923

PETCHORA PIPIT. *Anthus gustavi* Swinhoe. A male obtained on Fair Island, Sept. 24th, 1925, by Rear-Admiral Stenhouse (*Scottish Naturalist*, 1925, 141, 173). Normally this bird, which closely resembles the Red-throated Pipit in winter dress, migrates south-east.

PADDY-FIELD WARBLER. *Acrocephalus a. agricola* (Jerdon). A male, also from Fair Island, October 1st, 1925. The bird breeds in Astrakan, Turkestan, and other parts of Asia, and winters in India. It resembles Blyth's Reed-Warbler, but is smaller.

ICELAND REDWING. *Turdus musicus coburni* Sharpe. See p. 249.

OUTER HEBRIDEAN WREN. *Troglodytes t. hebridensis* Meinertzhagen. See *ante*, p. 136. Recognised in Lewis, Harris, North and South Uist (*Brit. Birds*, xxii. 98).

AMERICAN NIGHTJAR. *Chordeiles v. virginianus* (Gm.). A female shot on the Scilly Islands, Sept. 17th, 1927 (*Bull. B.O.C.* xlviii. 41, and *Brit. Birds*, xxii. 99). Normal migration to South Brazil, Argentine, and Paraguay.

PALE-BREASTED BRENT GOOSE. *Branta bernicla hrota* (Müll.). *Ibis*, 1927, 311. See Series II, 4th Edition, p. 10.

AMERICAN RED-NECKED GREBE. *Podiceps griseigena holbœllii* Reinh. Ross-shire, Sept. 1925. Similar to our bird, only larger.

AMERICAN SNIPE. *Gallinago g. delicata* (Ord). Now admitted. See *ante*, p. 185.

SUB-SPECIES ADDED TO THE BRITISH LIST SINCE THE PUBLICATION OF SERIES I. AND II.

Masked Wagtail. *Motacilla alba personata* Gould.

An adult female Masked Wagtail, a western Asiatic race which winters in India, was obtained near St. Leonards, Sussex, on April 26th, 1919. The bird is distinguished from the Pied Wagtail, in all plumage phases, by a white line behind the eye, and by black or dark grey ear-coverts and sides of the neck ("Practical Handbook," i. 213). Although there was no suggestion in the condition of the bird that it had been in captivity, there is a chance that it may have been assisted on its way by human aid; at any rate it appears a little soon, seeing that no others of this form have been met with in our islands, to include it as an accidental wanderer.

Siberian Lesser Whitethroat. *Sylvia curruca affinis* Blyth.

Three examples of this Siberian race, which as a rule winters in India, being known in Persia and other countries on passage, were discovered in Fair Island, one in October, 1921, and the others in September and October, 1923. As so many Siberian birds normally or accidentally stop to rest on Fair Island and other Scottish islands, it is reasonable to accept this as evidence of occasional abnormal passage migration. The bird is

separated from the typical Lesser Whitethroat, which is also known on Fair Island, by its wing-formula, for the second primary is always shorter than the 6th, and in our bird it usually measures between the 5th and 6th, and is seldom as short as the 6th. These minute structural differences, due to geographical segregation, are very interesting and important, but one wonders if the measurement of a very much larger range of skins would reveal more variation than is at present suspected.

Eastern Great Reed-Warbler. *Acrocephalus arundinaceus orientalis* (Temminck and Schlegel).

A male of this race, which is known to have a wide range in Central Asia, and to winter in the Malays and some western Pacific islands, was picked up under telegraph wires at St. Leonards in August, 1916. It is distinguished from the typical form by its wing-formula, for the 4th primary is usually longer than the 2nd, whereas in the other it is always shorter than the 2nd.

Continental Hedge-Sparrow. *Prunella modularis modularis* (Linnæus).

In 1915 the Committee of the B.O.U. believed that the difference in wing-formula between the Continental and British Hedge-Sparrows was not constant (i. 233), but they have now changed their mind and include this bird as a regular passage migrant. I am interested, for when at Spurn in October, 1911, I noticed a number of Hedge-Sparrows on passage, and shot one to make sure; Messrs. Witherby and Hartert kindly confirmed my idea that it was an oversea migrant of this form. It was paler on the throat and breast than the birds which were always about, and the wing-formula was correct; the 2nd primary was considerably longer than the 7th.

Steppe-Buzzard. *Buteo buteo vulpinus* Gloger.

The Steppe-Buzzard, a Russian and Asiatic race, which winters in Africa and India, was mentioned in Series I. p. 366 amongst the reputed British species, because at that time the information about the three reported occurrences was deemed insufficient. Mr. Witherby has examined the Wiltshire specimen, obtained in 1864, recorded by Gould, and preserved in the British Museum, and one of the Newcastle specimens. He believes the history of the first to be reliable, but finds that the only Newcastle specimen which can be traced is a Common Buzzard. All Buzzards are variable, but the Steppe-Buzzard is a smaller bird than the Common Buzzard. On the strength of the Wiltshire record the bird is now included.

Færoe Snipe. *Capella gallinago færoeensis* (Brehm).

The Snipe of Iceland and the Færoe Islands differs from the resident form in plumage, and is on the average larger. It is redder on the nape, mantle, and scapulars, and the mantle, scapulars, and inner secondaries are "more plentifully vermiculated redder tawny; black-brown streaks on sides of throat hardly indicated or absent," and there are one or two other differences in shade ("Practical Handbook," ii. 678). It is now found to be a winter visitor, probably regular, for specimens have been examined from Ireland, Scotland, and Cornwall.

Iceland Redshank. *Tringa totanus robusta* (Schiöler).

Mrs. Meinertzhagen's careful work on the plumage of birds has added another sub-species to our list, for it appears probable that the Redshank which nests in Iceland and the Færoes is, like the Snipe, a regular winter visitor. It is indistinguishable by plumage from our bird in winter, but in summer is darker above and more heavily spotted beneath, and on the average is

a larger bird. Examples of this form have been identified from England, Wales, Scotland, and Ireland.

Southern Dunlin. *Erolia alpina schinzii* (Brehm).

Dunlin or **Lapland Dunlin.** *Erolia alpina alpina* (Linnæus).

The Dunlins which nest in Britain and on the coasts of the North Sea and southern Baltic are now separated from the northern bird, and are identified with the small race formerly called Schinz's Dunlin, but the differences are slight. The actual range of the two is still ill defined, but the northern bird is certainly a passage migrant along our shores and probably a winter visitor.

Northern Golden Plover. *Pluvialis apricarius apricarius* (Linnæus).

Southern Golden Plover. *Pluvialis apricarius altifrons* (Brehm).

The Golden Plovers which inhabit or visit the British Isles have been separated, but the exact ranges or the status in our Islands is still uncertain. In winter the two sub-species are very similar, but in summer the Northern bird is paler on the upper parts, but has a dark band across the forehead at the base of the bill. A broad white band follows and extends above the eye and down the neck to the breast. The cheeks and throat are blackish-brown, much darker than in the British bird. The Northern bird nests in Northern Europe and Iceland, and is a winter visitor and passage migrant; the Southern form nests in Britain and Jutland, and probably elsewhere. For further details see "Practical Handbook," ii. 534.

Northern Guillemot. *Uria aalge aalge* (Pontoppidan).

Southern Guillemot. *Uria aalge albionis* Witherby.

In 1923 Mr. Witherby found that two distinct forms of the

Guillemot occur in the British Islands. The darker bird, practically black on the upper parts, nests in Iceland, the Færoes, and Scandinavia, and probably in the Orkneys and Shetlands, for he has examined birds in breeding dress from those groups. The Southern bird, which is our usual breeding species, is much paler both in winter and summer, and its flank streaks are paler and as a rule narrower. The Northern Guillemot appears to be common off our coasts in winter.

Irish Red Grouse. *Lagopus scoticus hibernicus* (Kleinschmidt).

The Red Grouse of Ireland is a paler, yellower bird than that of Britain, but the distinctions are not very constant.

Scottish Ptarmigan. *Lagopus mutus millaisi* Hartert.

Dr. Hartert finds that the Ptarmigan of Scotland is paler and greyer than other Ptarmigans in autumn dress, and the female in summer is a richer golden-buff.

Iceland Redwing. *Turdus musicus coburni* Sharpe.

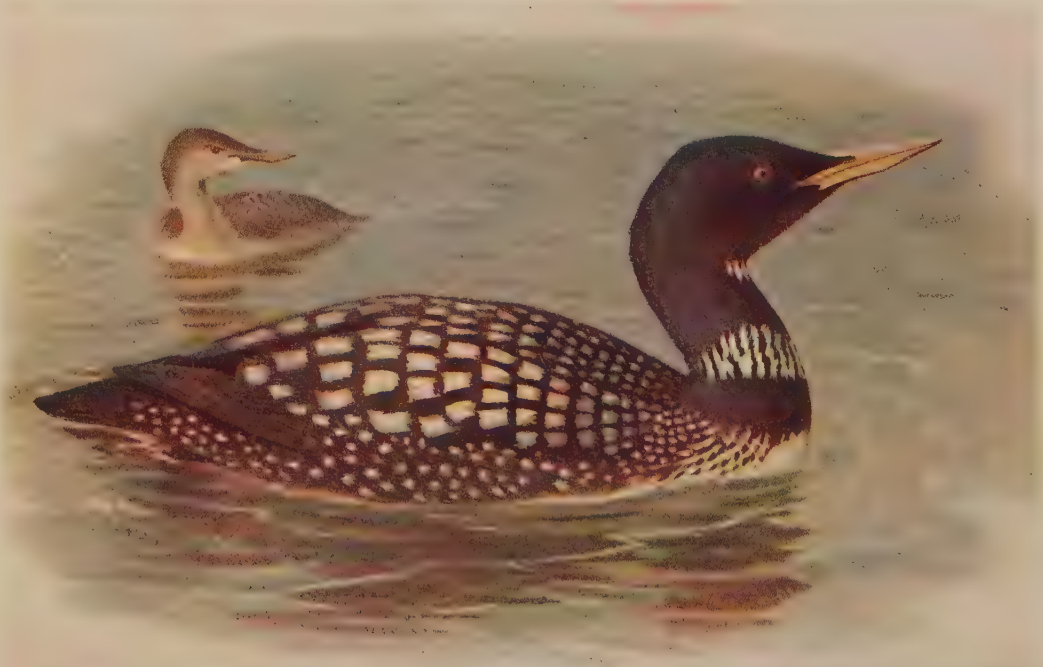
The occurrence in our Islands of birds which normally nest in Iceland, the Færoes, and Greenland is not surprising, and has interest in defining more accurately whence come some of our winter visitors and passage birds. The close study of minute variation, arrived at only by the comparison of large series of specimens and judging by averages, may, however, lead us astray. The announcement in *British Birds* for June, 1926, that yet another sub-species must be added to the British list, has interest in quite another way if we consider the history of the supposed race.

Twenty-five years ago Bowdler Sharpe described the Iceland Redwing as paler above and on the flanks than the ordinary visitor to England, and named the bird *Turdus coburni*, but objection was taken to the species on the ground that the specimens examined were June birds in worn plumage. Four

years later Hantzch tried to establish the species but failed to get his colour and size distinctions accepted, and when, more recently, Herr von Lucanus, after examining two birds, stated his belief in the geographical race he met with no greater success. Dr. C. B. Ticehurst, however, after examining a large series of Iceland birds, declares that they are darker than Swedish Redwings, and that the wing "is usually longer," but Mr. Witherby adds that, "as in most sub-species, there is some variation, and colour and size should be taken together."

Mrs. Meinertzhagen finds that a Redwing shot in October, 1924, in Ross-shire, matches the average Iceland Redwing in colour coupled with a long wing; and Surgeon Rear-Admiral J. H. Stenhouse considers that two obtained from a small party on Fair Island in October, 1925, are of this race. On the strength of these three birds the Iceland Redwing is added to the British list, and in spite of the fact that Dr. Ticehurst does not agree with Sharpe's description the name *coburni* is adopted. In other cases have not old-established names been rejected on account of misleading and incorrect descriptions? It will not surprise me if in the future some one insists that Sharpe's name cannot be used, and that a name founded on the birds examined by Dr. Ticehurst must be adopted.

From my previous remarks on sub-species it must be evident that I am not satisfied that in every case the races or forms deserve separation; possibly in the future some of them will be rejected. I am encouraged in this view by a remark made by Mr. Collingwood Ingram in a paper in the *Ibis*, 1926, 254, when discussing the Blue Tits that he has studied in France: "I have a large series of *P. cæruleus* collected in various parts of France at different seasons, and I confess my inability to separate these with any degree of certainty from the so-called British *P. cæruleus obscurus*. In my opinion this latter is a very doubtful sub-species." No one can doubt Mr. Ingram's qualifications as a careful and widely experienced ornithologist.



3 *Pl.* 118. R 250.

White-billed Northern Diver. (pp. 236, 297).

3 *Pl.* 119.

Great Crested Grebe and young. (pp 239, 297).

R 251.

LIST OF THE BIRDS ON THE BRITISH LIST.

COMPILED BY A COMMITTEE OF THE B.O.U., AND ADOPTED AND PUBLISHED BY THAT BODY IN 1923. WITH NOTES ON DISTRIBUTION AND STATUS IN THE BRITISH ISLES.

IN the following list alterations from the second B.O.U. list (1915), used in "The Birds of the British Isles and their Eggs," are mentioned, and comparisons made with the names in "A Check-List of British Birds," 1924, compiled from the "Practical Handbook of British Birds," by H. F. Witherby.

The reference numbers give the pages in Series I. and II. of "Birds of the British Isles," 1925 and 1926 editions.

Order *PASSERIFORMES.*

Family CORVIDÆ.

RAVEN. *Corvus corax corax* Linnæus, i. 19. Resident and sedentary; winter visitor from northern Europe.

CARRION-CROW. *Corvus corone corone* Linnæus, i. 21. Resident, and scarce winter visitor from Europe.

HOODED CROW. *Corvus cornix cornix* Linnæus, i. 23. Resident and winter visitor from Europe.

ROOK. *Corvus frugilegus frugilegus* Linnæus, i. 25. Resident, subject to winter movements and autumn emigration, and winter visitor.

JACKDAW. *Corvus monedula spermologus* Vieillot; *Corvus monedula* Linnæus, i. 28; *Colœus monedula spermologus* (Vieillot), Check-List. Resident and summer resident; winter visitor. Our bird, the Western and Central European form, has darker underparts than the northern and Scandinavian type sub-species, and has no white on the neck. No winter visitors, so far, have been found to be of the northern form.

MAGPIE. *Pica pica pica* (Linnæus), i. 30. Resident, some wandering in autumn, and perhaps emigrating.

CONTINENTAL JAY. *Garrulus glandarius glandarius* (Linnæus), i. 32. Irregular winter visitor.

BRITISH JAY. *G. glandarius rufitergum* Hartert, i. 32. Resident.

IRISH JAY. *G. glandarius hibernicus* Witherby and Hartert, i. 32. Resident, Ireland.

THICK-BILLED NUTCRACKER. *Nucifraga caryocatactes caryocatactes* (Linnæus), i. 35. An occasional wanderer from Europe.

SLENDER-BILLED NUTCRACKER. *N. caryocatactes macrorhynchus* C. L. Brehm, i. 35. The Siberian form, more migratory than the other, and reaching us more frequently as a wanderer in autumn and winter.

CHOUGH. *Pyrrhocorax pyrrhocorax* (Linnæus), i. 36. Resident, local; occasionally wanders.

Family STURNIDÆ.

STARLING. *Sturnus vulgaris vulgaris* Linnæus, i. 38. Resident; doubtful summer resident; winter visitor, and passage migrant.

SHETLAND STARLING. *S. vulgaris zetlandicus* Hartert, i. 41. Resident, Shetlands.

ROSE-COLOURED PASTOR. *Pastor roseus* (Linnæus), i. 41. A wanderer, rather than a migrant, from S.E. Europe or Asia.

Family ORIOLIDÆ.

GOLDEN ORIOLE. *Oriolus oriolus oriolus* (Linnæus), i. 42. Summer visitor, if allowed to nest; possibly passage migrant.

Family FRINGILLIDÆ.

GREENFINCH. *Chloris chloris chloris* (Linnæus), i. 44. Resident, wandering in winter. Summer resident; winter visitor, and passage migrant.

HAWFINCH. *Coccothraustes coccothraustes coccothraustes* (Linnæus), i. 46. Resident, wandering in winter. Occasional migrant.

CONTINENTAL GOLDFINCH. *Carduelis carduelis carduelis* (Linnæus), i. 48. This sub-species is enclosed in square brackets in both lists, for though it is known that autumn immigrants reach our eastern shores, no examples have yet been proved to be of this form.

BRITISH GOLDFINCH. *C. carduelis britannica* (Hartert), i. 48. Resident, winter wanderer in Britain, and possibly emigrant; winter visitor or passage migrant, unless these birds are of the Continental race.

SISKIN. *Spinus spinus* (Linnæus), i. 50; *Carduelis spinus* (Linnæus), Check-List. Resident, winter visitor.

CITRIL FINCH. *Spinus citrinella citrinella* (Pallas), i. 52; *Carduelis c. citrinella* (Pallas), Check-List. Native of Central and Southern Europe; included on strength of a single individual taken by a bird-catcher.

SERIN. *Serinus canaria serinus* (Linnæus); *Serinus serinus* (Linnæus), i. 52. Occasional wanderer to Britain. Some may be referable to the more northern sub-species, but those examined were probably from Mediterranean countries.

HOUSE-SPARROW. *Passer domesticus domesticus* (Linnæus), i. 53. Resident and wanderer. Winter visitor or passage migrant.

TREE-SPARROW. *Passer montanus montanus* (Linnæus), i. 56. Resident; winter visitor; passage migrant.

SNOW-FINCH. *Montifringilla nivalis nivalis* (Linnæus), i. 58. Very rare wanderer from Alpine Europe.

CHAFFINCH. *Fringilla cœlebs cœlebs* Linnæus, i. 59. Resident; winter visitor; passage migrant. Little evidence of more than local winter wandering of home-bred birds.

BRAMBLING. *Fringilla montifringilla* Linnæus, i. 61. Winter visitor. Has nested in Scotland.

LINNET. *Acanthis cannabina cannabina* (Linnæus), i. 63; *Carduelis cannabina cannabina* (Linn.), Check-List. Resident; summer resident; passage migrant.

MEALY REDPOLL. *Acanthis linaria linaria* (Linnæus), i. 65; *Carduelis l. linaria* (Linn.), Check-List. Winter visitor from Northern Europe.

GREENLAND REDPOLL. *Acanthis linaria rostrata* (Coues), i. 66; *Carduelis l. rostrata* (Coues), Check-List. Fairly frequent wanderer on autumn migration from Greenland to Scotland and Ireland. Normally winters in Canada and U.S.A.

[HOLBÖLL'S REDPOLL. *A. linaria holbœllii* (C. L. Brehm), i. 66; *Carduelis l. holbœllii* (Brehm), Check-List. Several recorded of this Polar wanderer, but it may be merely a variety of the Mealy Redpoll, and not a true sub-species.]

LESSER REDPOLL. *Acanthis linaria cabaret* (P. L. S. Müller), i. 65; *Carduelis l. cabaret* (Müller), Check-List. Resident, and gregarious winter wanderer. Summer resident in part. Winter visitor or passage.

HORNEMANN'S REDPOLL. *Acanthis hornemanni hornemanni* (Holböll), i. 68; *Carduelis h. hornemanni* (Holb.), Check-List. Rare wanderer on migration from Scotland.

HOARY REDPOLL. *A. hornemanni exilipes* (Coues), i. 68; *Carduelis h. exilipes* (Coues), Check-List. Rare wanderer from Northern America or Europe.

TWITE. *Acanthis flavirostris flavirostris* (Linnæus), i. 69; *Carduelis f. flavirostris* (Linn.), Check-List. Resident and winter visitor from Northern Europe.

NORTHERN BULLFINCH. *Pyrrhula pyrrhula pyrrhula* (Linnæus), i. 70. Autumn and winter visitor from Europe.

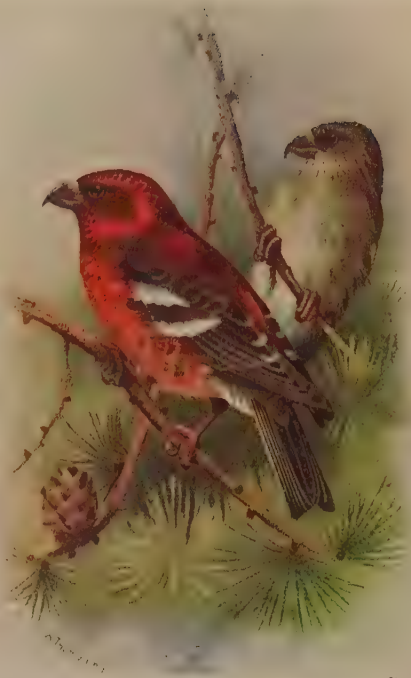
BRITISH BULLFINCH. *P. pyrrhula nesa* Mathews and Iredale; *P. pyrrhula pileata* Macgillivray, i. 70. Resident. Supposed migrants probably referable to previous form. The alteration of this specific name is due to personal opinion as to the particular sub-species that Macgillivray

3 *Pl.* 120. *R* 254.

Glaucous Gull, immature, and young Herring-gulls. (pp. 214, 292).

3 *Pl.* 121.

Pine Grosbeak. (pp. 92, 255).



R 255.

Two barred Crossbill. (pp. 92, 255).

was describing, though it is known that he examined British birds. The change, in my opinion, is quite unnecessary. Although the Check-List accepts the new name, it was called *pileata* in the " Practical Handbook."

SCARLET GROSBEAK. *Erythrina erythrina erythrina* (Pallas); *Carpodacus erythinus erythinus* (Pallas), i. 72 and Check-List. Irregular autumn visitor from Northern Europe. As dates of publication are uncertain, it seems a pity that this name should have been changed, when there was a difference of opinion in the Committee.

PINE-GROSBEAK. *Pinicola enucleator enucleator* (Linnæus), i. 73. Rare winter wanderer from Northern Europe.

CROSSBILL. *Loxia curvirostra curvirostra* Linnæus, i. 73. Normally an irregular visitor, often in large numbers or " irruptions " from European areas. Nests in many places after these periodic invasions, and may now be a permanent resident in certain districts.

SCOTTISH CROSSBILL. *L. curvirostra scotica* Hartert, i. 73. Resident in Scotland.

PARROT-CROSSBILL. *Loxia pytyopsittacus* Borkhausen, i. 73. Very rare nomadic wanderer from North Europe. Formerly rejected by the B.O.U., as a race of *L. curvirostra*; now accepted as a distinct species.

TWO-BARRED CROSSBILL. *Loxia leucoptera bifasciata* (C. L. Brehm), i. 75. Rare wanderer from Northern Europe or Siberia.

CORN-BUNTING. *Emberiza calandra calandra* Linnæus, i. 76. Resident; winter wanderer. Summer resident in part. Also winter visitor or passage migrant.

YELLOW BUNTING. *Emberiza citrinella citrinella* Linnæus, i. 77. Resident, winter visitor and local migrant.

PINE-BUNTING. *Emberiza leucocephala* S. G. Gmelin, i. 79. One at Fair Island. Probably a lost wanderer from Siberia. Has been recorded elsewhere in Europe.

CIRL-BUNTING. *Emberiza cirlus* Linnæus, i. 80. Sedentary; occasionally wanders in winter.

BLACK-HEADED BUNTING. *Emberiza melanocephala* Scopoli, i. 81. Straggler from S.E. Europe, usually migrates eastwards.

ROCK-BUNTING. *Emberiza cia cia* Linnæus, i. 82. Very occasional wanderer from Mediterranean. Not, apparently, a regular migrant.

EAST SIBERIAN MEADOW-BUNTING. *Emberiza cioides castaneiceps* Moore, i. 82. Once recorded. Lost wanderer.

ORTOLAN-BUNTING. *Emberiza hortulana* Linnæus, i. 83. Passage migrant.

YELLOW-BREASTED BUNTING. *Emberiza aureola* Pallas, i. 84. Three or more. Irregular or abnormal passage migrant.

RUSTIC BUNTING. *Emberiza rustica* Pallas, i. 84. Rare wanderer on passage migration.

LITTLE BUNTING. *Emberiza pusilla* Pallas, i. 85. Straggler on passage migration.

REED-BUNTING. *Emberiza schæniclus schæniclus* (Linnæus), i. 86. Summer resident, but many winter; winter visitor and passage migrant.

EASTERN LARGE-BILLED REED-BUNTING. *Emberiza tschusii tschusii* Reiser and Almasy; *E. palustris tschusii* R. and A., i. 88. One. Eastern European form; lost wanderer. Specific name altered because *palustris* was discovered to be preoccupied by a bunting named by Frenzel.

LARGE-BILLED REED-BUNTING. *E. tschusii compilator* Mathews and Iredale; *E. palustris* Savi, i. 88. Two. Wanderers from Southern Europe.

LAPLAND BUNTING. *Calcarius lapponicus lapponicus* (Linnæus), i. 89. Rare passage migrant.

SNOW-BUNTING. *Plectrophenax nivalis* (Linnæus), i. 90. Winter visitor and passage migrant. Few resident in Scotland.

Family ALAUDIDÆ.

SKY-LARK. *Alauda arvensis arvensis* Linnæus, i. 92. Resident; summer resident; winter visitor, and passage migrant.

EASTERN SKY-LARK. *A. arvensis intermedia* Swinhoe; *A. arvensis cinerascens* Ehmcke, i. 95. Three stragglers on migration from Siberia. Name altered because the majority of the Committee now consider that various sub-species are not valid, and that *intermedia* has a much wider range than was supposed.

WOOD-LARK. *Lullula arborea arborea* (Linnæus), i. 95. Resident and local migrant. Passage migrant.

CRESTED LARK. *Galerida cristata cristata* (Linnæus), i. 97. Rare wanderer from the Continent.

SHORT-TOED LARK. *Calendrella brachydactyla brachydactyla* (Leisler), i. 98. Straggler rather than migrant from south.

EASTERN SHORT-TOED LARK. *C. brachydactyla longipennis* (Eversmann), i. 98. One recorded on Fair Island. Lost.

WHITE-WINGED LARK. *Melanocorypha sibirica* (Gmelin), i. 98. Wanderer in autumn from Eastern Europe or Asia.

CALANDRA LARK. *Melanocorypha calandra calandra* (Linnæus), i. 99. Southern Europe. Early records regarded as possible escapes from captivity.

BLACK LARK. *Melanocorypha yeltoniensis* (Forster), i. 99. Rare wanderer in autumn and winter from Siberia.

SHORE-LARK. *Otocorys alpestris flava* (Gmelin); *O. alpestris* (Linnæus), i. 99; *Eremophila alpestris flava* (Gmelin), Check-List. Winter visitor and passage migrant from Northern Europe. The European bird is supposed to be separable from the American type. *Otocorys* is not the oldest name, but the two earlier rejected because pre-occupied by other genera.

Family MOTACILLIDÆ.

WHITE WAGTAIL. *Motacilla alba alba* Linnæus, i. 101. Passage migrant, occasionally nesting.

PIED WAGTAIL. *M. alba yarrellii* Gould; *Motacilla lugubris* (Temminck), i. 103. Resident, many wintering on south coast; summer resident. *Lugubris* preoccupied by a few months.

MASKED WAGTAIL. *M. alba personata* Gould. Added to British List since "Birds of the British Isles" published, on the strength of a single example of this Asiatic subspecies obtained in Sussex. If not introduced, a lost wanderer.

GREY WAGTAIL. *Motacilla cinerea cinerea* (Tunstall); *M. boarula* Scopoli, i. 106. Resident, wandering in winter. Possible emigration. Specific name altered because there was a difference of opinion about which bird Scopoli was describing.

BLUE-HEADED WAGTAIL. *Motacilla flava flava* Linnæus, i. 110. Passage migrant and occasional summer resident.

YELLOW WAGTAIL. *Motacilla flava rayi* (Bonaparte); *Motacilla raii* (Bonaparte), i. 108. Summer resident and passage migrant. Formerly considered a distinct species.

SYKES'S WAGTAIL. *M. flava beema* (Sykes), i. 111. Two—stragglers from Siberia.

ASHY-HEADED WAGTAIL. *M. flava cinereocapilla* Savi, i. 111. One, if not a variety, a lost wanderer.

GREY-HEADED WAGTAIL. *M. f. thunbergi* Billberg, i. 112. Occasional passage migrant.

BLACK-HEADED WAGTAIL. *Motacilla feldegg* Michahelles; *M. feldeggi* Michah., i. 112; *M. flava feldegg* Michah., Check-List. Four; wanderers to Western Europe from S.E. Europe or Asia. *Feldeggi* corrected to *feldegg*, as originally spelt.

TREE-PIPIT. *Anthus trivialis trivialis* (Linnæus), i. 112. Summer resident and passage migrant.

MEADOW-PIPIT. *Anthus pratensis* (Linnæus), i. 114. Summer resident, and resident, some remaining all winter. Passage migrant. Winter visitor.

RED-THROATED PIPIT. *Anthus cervinus* (Pallas), i. 117. Rare passage migrant.

TAWNY PIPIT. *Anthus campestris* (Linnæus), i. 117. Occasional wanderer on passage.

RICHARD'S PIPIT. *Anthus richardi richardi* Vieillot, i. 118. Passage migrant.

WATER-PIPIT. *Anthus spinoletta spinoletta* (Linnæus), i. 118. Passage migrant, from Europe.

AMERICAN WATER-PIPIT. *A. spinoletta rubescens* (Tunstall), i. 119. One, evidently lost, on St. Kilda.

ROCK-PIPIT. *A. spinoletta petrosus* (Montagu); *A. petrosus* (Mont.), i. 119. Resident and passage migrant. Now considered to be a sub-species of *spinoletta*.

SCANDINAVIAN ROCK-PIPIT. *A. spinoletta littoralis* Brehm, i. 119. Passage migrant.

Family CERTHIIDÆ.

NORTHERN TREE-CREEPER. *Certhia familiaris familiaris* Linnæus, i. 121. Two stragglers recorded from Scotland.

BRITISH TREE-CREEPER. *C. familiaris brittanica* Ridgway, i. 121. Resident; nomadic in winter.

WALL-CREEPER. *Tichodroma muraria* (Linnæus), i. 124. Rare straggler from Central Europe.

Family SITTIDÆ.

BRITISH NUTHATCH. *Sitta europæa affinis* Blyth; *Sitta cæsia* Wolff, i. 124. Resident, wandering in winter. The *S. cæsia* of Germany considered a sub-species, from which our bird differs, as it does from the Swedish type.

Family REGULIDÆ.

CONTINENTAL GOLDCREST. *Regulus regulus regulus* (Linnæus), i. 126. Passage migrant.

BRITISH GOLDCREST. *R. regulus anglorum* Hartert, i. 126. Resident, summer resident, or passage migrant, or winter visitor. The distinction between the Continental and British birds is merely in shade, and is by no means easy to

see. Very few of the abundant migrants have been examined by experts, and it is by no means certain how far our birds are migratory, and whether the sub-species is justifiable.

FIRE-CREST. *Regulus ignicapillus ignicapillus* (Temminck), i. 129. Winter visitor or passage migrant from Central Europe.

Family PANURIDÆ.

BEARDED TITMOUSE. *Panurus biarmicus biarmicus* (Linnæus), i. 130. Resident. Very occasionally wanders.

Family PARIDÆ.

CONTINENTAL GREAT TITMOUSE. *Parus major major* Linnæus, i. 132. Occasional passage migrant in large numbers.

BRITISH GREAT TITMOUSE. *P. major newtoni* Prazák, i. 132. Resident; nomadic in winter.

CONTINENTAL COAL-TITMOUSE. *Parus ater ater* Linnæus, i. 135. Occasional passage migrant or winter visitor.

BRITISH COAL-TITMOUSE. *P. ater britannicus* Sharpe and Dresser, i. 135. Resident, but wandering in winter.

IRISH COAL-TITMOUSE. *P. ater hibernicus* Ogilvie-Grant, i. 136. Resident in Ireland; wanders in winter locally.

BRITISH MARSH-TITMOUSE. *Parus palustris dresseri* Stejneger, i. 137. Resident and wanderer in winter.

NORTHERN WILLOW-TITMOUSE. *Parus atricapillus borealis* Selys-Longchamps; *P. borealis* Selys-L., i. 139. One straggler recorded.

BRITISH WILLOW-TITMOUSE. *P. atricapillus kleinschmidti* Hellmayr; *P. borealis kleinschmidti* Hellmayr, i. 139. Resident. Actual range in Britain still uncertain. The association of all the *borealis* group with the American *atricapillus* explains the change in the specific name.

CONTINENTAL BLUE TITMOUSE. *Parus cæruleus cæruleus* Linnæus, i. 141. Only one so far identified, but immigrants are common and may be of this form.

BRITISH BLUE TITMOUSE. *Parus cæruleus obscurus* Prazák, i. 141. Resident, so far as is known, confined to British Isles. Winter movements, and possible immigration and emigration may be of Continental birds.

NORTHERN CRESTED TITMOUSE. *Parus cristatus cristatus* Linnæus, i. 144. One recorded. A straggler from Northern Europe.

SCOTTISH CRESTED TITMOUSE. *P. cristatus scoticus* (Prazák), i. 144. Resident in restricted areas in Scotland.

CENTRAL EUROPEAN CRESTED TITMOUSE. *P. cristatus mitratus* C. L. Brehm, i. 144. One recorded, wanderer from Central Europe.

NORTHERN LONG-TAILED TITMOUSE. *Ægithalos caudatus caudatus* (Linnæus), i. 145. Rare straggler from North Europe.

BRITISH LONG-TAILED TITMOUSE. *A. caudatus roseus* (Blyth), i. 145. Resident; wandering nomadically in winter.

Family LANIIDÆ.

GREAT GREY SHRIKE. *Lanius excubitor excubitor* Linnæus, i. 148. Winter visitor from North Europe, and perhaps passage migrant.

SOUTHERN GREAT GREY SHRIKE. *L. excubitor meridionalis* Temminck; *L. meridionalis* Temm., i. 149. One identified. Wanderer from the South.

LESSER GREY SHRIKE. *Lanius minor* Gmelin, i. 150. Uncommon passage migrant.

WOODCHAT-SHRIKE. *Lanius senator senator* Linnæus, i. 152. Occasional northward wanderer from Mediterranean countries.

CORSICAN WOODCHAT-SHRIKE. *L. senator badius* Hartlaub, i. 153. One recorded. Usually migrates to Africa.

RED-BACKED SHRIKE. *Lanius collurio collurio* Linnæus, i. 150. Summer resident, and perhaps occasional passage migrant.

MASKED SHRIKE. *Lanius rubicus* Lichtenstein, i. 153. One, an eastern European and Asiatic species. If it came unaided must have been hopelessly lost.

Family BOMBYCILLIDÆ.

WAXWING. *Bombycilla garrulus* (Linnæus); *Ampelis garrulus* (Linn,), i. 154. Winter visitor, sometimes in large numbers. Name altered on account of a recent rule of nomenclature; rather an unnecessary alteration.

Family MUSCICAPIDÆ.

SPOTTED FLYCATCHER. *Muscicapa striata striata* (Pallas); *Muscicapa grisola* Linn., i. 241. Summer resident and passage migrant. The long-established names of this and other species were altered, on account of strict priority rules, after the discovery of what is known as Vroeg's Sale Catalogue, an obscure work of which only three copies are known to exist. Part of this work was shown to have been written by Pallas, and the name *striata* antedates *grisola* by two years. The International Congress has more than once altered its opinion about strict adherence to certain rules, and many ornithologists maintain that no established names should be altered, making confusion worse confounded, on such a publication.

BROWN FLYCATCHER. *Muscicapa latirostris* Raffles, i. 243. One. An East Siberian species. Like others from far east of the normal range, there is always a possibility that the birds received some aid.

PIED FLYCATCHER. *Ficedula hypoleuca hypoleuca* (Pallas); *Muscicapa hypoleuca hypoleuca* (Pallas), Check List; *Muscicapa atricapilla* Linn., i. 243. Summer resident and passage migrant. The specific name altered on account of the priority of Vroeg's Catalogue. It seems a pity that further splitting of the genus should have been considered necessary.

WHITE-COLLARED FLYCATCHER. *F. albicollis* (Temminck); *Muscicapa albicollis* Temminck, Check-List; *Muscicapa collaris* Bechstein, i. 246. A rare straggler on passage

migration. *M. collaris* preoccupied by Latham for another species.

RED-BREASTED FLYCATCHER. *Siphia parva parva* (Bechstein); *Muscicapa parva parva* Bechst., Check-List, i. 246. Rare passage migrant.

Family SYLVIIDÆ.

(Included in the Muscicapidæ in the "Practical Handbook.")

WHITETHROAT. *Sylvia communis communis* Latham, i. 156. Summer resident and passage migrant.

LESSER WHITETHROAT. *Sylvia curruca curruca* (Linnæus), i. 158. Summer resident and passage migrant.

SIBERIAN LESSER WHITETHROAT. *S. curruca affinis* Blyth. One taken at Fair Island in 1921, and others in 1923.

RUPPELL'S WARBLER. *Sylvia ruppelli* Temminck, i. 164. Two recorded in 1914; Eastern species.

GARDEN-WARBLER. *Sylvia borin* (Boddaërt); *Sylvia simplex* Latham, i. 160. Summer resident and passage migrant. The old established name *hortensis* was really applied to the Orphean Warbler, and *borin* antedates *simplex*, though for some time it was doubted if Boddaërt meant the Garden-Warbler.

BLACKCAP. *Sylvia atricapilla atricapilla* (Linnæus), i. 162. Summer visitor and passage migrant.

SARDINIAN WARBLER. *Sylvia melanocephala melanocephala* (Gmelin), i. 164. One, a wanderer from Southern Europe.

ORPHEAN WARBLER. *Sylvia hortensis hortensis* (Gmelin); *Sylvia orphea* Temminck, i. 165. Rare wanderer from Southern Europe. The decision that Gmelin described this bird and not the Garden-Warbler explains the change of name.

BARRED WARBLER. *Sylvia nisoria nisoria* (Bechstein), i. 165. Occasional passage migrant.

SUBALPINE WARBLER. *Sylvia cantillans cantillans* (Pallas); *Sylvia subalpina* Temminck, i. 166. Lost wanderer from South Europe to Scottish Islands.

DARTFORD WARBLER. *Melizophilus undatus dartfordiensis* (Latham), i. 167; *Sylvia undata dartfordiensis* Lath., Check-List. Sedentary resident.

RUFOUS WARBLER. *Agrobates galactotes galactotes* (Temminck), i. 168 (spelt *galactodes* in error in Ser. I.). An occasional accidental northward wanderer.

BROWN-BACKED WARBLER. *A. galactotes syriacus* (Ehrenberg). A south-eastern European or Asiatic species which has been four times recorded, and was first identified and recorded as *Ædon familiaris* Ménétr., but on further examination of the first specimen it was relegated to this species. The Grey-backed Warbler, *A. familiaris*, is now considered to be a sub-species of *Agrobates galactotes*, i. 169.

GRASSHOPPER-WARBLER. *Locustella nævia nævia* (Boddaërt), i. 169. Summer resident and passage migrant.

TEMMINCK'S GRASSHOPPER WARBLER. *Locustella lanceolata* (Temminck), i. 171. Very rare visitor on passage migration.

PALLAS'S GRASSHOPPER WARBLER. *Locustella certhiola* (Pallas), i. 171. One, lost wanderer from Siberia.

SAVI'S WARBLER. *Locustella luscinioides luscioniodes* (Savi), i. 171. Formerly summer resident. Has been recorded as a wanderer.

CETTI'S WARBLER. *Cettia cetti cetti* (Temminck); *Cettia cetti* (Marmora), i. 173. Three times recorded. A South European species little given to wandering. Fortunately the alteration noted above means no change of specific name, but it is a good example of the absurdity of the so-called rule of strict priority. Both men published the name in 1820, but Temminck in October and Marmora in December. Who first named the bird? Surely the actual date of publication is not necessarily the first worked out description.

REED-WARBLER. *Acrocephalus scirpaceus scirpaceus* (Hermann); *Acrocephalus streperus* (Vieillot), i. 173. Summer resident. Hermann's name overlooked!

BLYTH'S REED-WARBLER. *Acrocephalus dumetorum* Blyth, i. 176 (*dumatorum* a misprint). A Central and Northern Asiatic species that has reached us occasionally on migration, but the structural difference in the wing is so slight that the bird may have been overlooked.

MARSH-WARBLER. *Acrocephalus palustris* (Bechstein), i. 176. Summer resident; has wandered north.

GREAT REED-WARBLER. *Acrocephalus arundinaceus arundinaceus* (Linnæus), i. 178. Rare visitor on migration from Europe.

EASTERN GREAT REED-WARBLER. *A. arundinaceus orientalis* (Temminck and Schlegel). A Far Eastern species once recorded. May it not have been a variety which agreed in characters with the Western bird?

SEDGE-WARBLER. *Acrocephalus schoenobænus* (Linnæus), i. 178. Summer resident and passage migrant.

AQUATIC WARBLER. *Acrocephalus paludicola* (Vieillot); *Acrocephalus aquaticus* (Gmelin), i. 180. A wanderer on migration from Central Europe. Gmelin's description, formerly accepted (even when the "Practical Handbook" was published), not now considered reliable. Surely it might have been retained so long as there was doubt.

RADDE'S BUSH-WARBLER. *Herbivocula schwarzi* (Radde); *Lusciniola schwarzi* (Radde), i. 181. One, a very lost wanderer from East Siberia or other Asiatic area.

MOUSTACHED WARBLER. *Lusciniola melanopogon melanopogon* (Temminck), i. 181. One, may have come from Spain or Central Europe.

ICTERINE WARBLER. *Hippolais icterina* (Vieillot) (formerly spelt *Hypolais*), i. 181. Passage migrant, rare or accidental.

MELODIOUS WARBLER. *Hippolais polyglotta* (Vieillot), i. 182. Rare wanderer from Southern Europe.

OLIVACEOUS WARBLER. *Hippolais pallida elæcia* (Lindermayer); *Hypolais pallida* (Hemp. and Ehr.), i. 183. Single occurrence of a south-eastern European bird.

WILLOW-WARBLER. *Phylloscopus trochilus trochilus* (Linnæus), i. 183. Summer resident and passage migrant.

NORTHERN WILLOW-WARBLER. *P. trochilus eversmanni* (Bonaparte), i. 183. Passage migrant.

ARCTIC WARBLER. *Phylloscopus borealis borealis* (Blasius), i. 186. Obtained twice on migration; usually migrates south, not west, but occurs in Norway.

WOOD-WARBLER. *Phylloscopus sibilatrix sibilatrix* (Bechstein), i. 186. Summer resident and probably passage migrant.

CHIFFCHAFF. *Phylloscopus collybita collybita* (Vieillot), i. 188. Summer resident and passage migrant.

SCANDINAVIAN CHIFFCHAFF. *P. collybita abietinus* (Nilsson), i. 188. Passage migrant.

SIBERIAN CHIFFCHAFF. *P. collybita tristis* Blyth; *P. tristis* Blyth, i. 191. Passage migrant or lost wanderer several times recorded from Scotland. Formerly considered a species.

GREENISH WARBLER. *Phylloscopus nitidus viridanus* Blyth; *P. viridanus* Blyth, i. 191. Like the last, formerly considered a distinct species. Accidental wanderer on migration.

YELLOW-BROWED WARBLER. *Phylloscopus humei præmium* Mathews and Iredale; *P. superciliosus* (Gmelin), i. 192. Passage migrant. Gmelin's name preoccupied for an American warbler by Boddaërt.

PALLAS'S WARBLER. *Phylloscopus proregulus proregulus* (Pallas), i. 192. One recorded; an eastern Siberian bird that had wandered.

DUSKY WARBLER. *Phylloscopus fuscatus* (Blyth), i. 193. Two recorded, a Siberian species.

Family TURDIDÆ.

MISTLE-THRUSH. *Turdus viscivorus viscivorus* Linnæus, i. 193. Resident, summer resident, winter visitor, and passage migrant.

CONTINENTAL SONG-THRUSH. *Turdus philomelos philomelos* Brehm; *Turdus musicus musicus* Linn., i. 196. Passage migrant and winter visitor. When preparing the 1915 list the B.O.U. committee adopted the decision of the International Zoological Congress that where confusion was likely to be caused the strict law of priority might be broken. After it had been demonstrated that Linnæus's first *musicus* was the Redwing, and his later description not clear, this name was retained for a time, but now the majority of the committee make the change.

BRITISH SONG-THRUSH. *Turdus philomelos clarkei* Hartert; *T. musicus clarkii* Hartert, i. 196. See previous species. Resident, and summer resident. Local migrations.

HEBRIDEAN SONG-THRUSH. *T. philomelos hebridensis* Clarke; *T. musicus hebridensis* Clarke, i. 196. Resident. Some migration noted.

REDWING. *Turdus musicus* Linnæus; *T. iliacus* Linnæus, i. 199. Winter visitor and passage migrant. See remarks about name of Song-Thrush.

FIELDFARE. *Turdus pilaris* Linnæus, i. 201. Winter visitor and passage migrant.

DUSKY THRUSH. *Turdus eunomus* Temminck; *T. fuscatus* Pallas, i. 203. Name preoccupied by Vieillot. Twice recorded. Lost migrants.

BLACK-THROATED THRUSH. *Turdus ruficollis atrogularis* Temminck; *T. atrigularis* Temminck, i. 203. Error in spelling in all earlier books. A West Siberian straggler on migration.

BLACKBIRD. *Turdus merula merula* Linnæus, i. 204. Resident, summer resident, winter visitor, and passage migrant.

RING-OUZEL. *Turdus torquatus torquatus* Linnæus, i. 207. Summer resident and passage migrant.

ALPINE RING-OUZEL. *Turdus torquatus alpestris* (C. L. Brehm), i. 207. One straggler from Europe.

WHITE'S THRUSH. *Turdus aureus* Holandre, i. 209; *T. dauma aureus* Hol., Check-List. Rare winter wanderer from Siberia.

ROCK-THRUSH. *Monticola saxatilis* (Linnæus), i. 210. Rare wanderer from East Siberia.

REDSTART. *Phœnicurus phœnicurus phœnicurus* (Linnæus), i. 210. Summer resident and passage migrant.

BLACK REDSTART. *Phœnicurus ochrurus gibraltariensis* (Gmelin); *P. titys* (Bechstein), i. 212. Winter visitor and passage migrant. Has nested. Linnæus's *titys* is believed to be an old female Common Redstart.

CONTINENTAL REDBREAST. *Erithacus rubecula rubecula* (Linnæus), i. 215. Passage migrant and winter visitor.

BRITISH REDBREAST. *Erithacus rubecula melophilus* Hartert, i. 215. Resident, but some may migrate.

NIGHTINGALE. *Luscinia megarhyncha megarhyncha* C. L. Brehm, i. 217. Summer resident, and possible passage migrant.

THRUSH-NIGHTINGALE or SPROSSER. *Luscinia luscinia* (Linnæus), i. 220. Occasional on passage from Northern Europe.

RED-SPOTTED BLUETHROAT. *Cyanosylvia svecica svecica* (Linnæus), i. 220; *Luscinia svecica svecica* (Linn.), Check List. Two, wanderers on migration from north.

NORWEGIAN BLUETHROAT. *C. svecica gætkei* (Kleinschmidt); *C. svecica* (Linn.), i. 220; *Luscinia*, Check-List. Passage migrant. This is the form which occurs regularly.

WHITE-SPOTTED BLUETHROAT. *C. svecica cyanecula* (Wolf), i. 221; *Luscinia*, Check-List. Rare on passage migration.

BRITISH STONECHAT. *Saxicola torquata hibernans* (Hartert); *Saxicola rubicola* (Linnæus), i. 221. Resident in part, wandering in winter. Summer resident and passage. Hartert considers that *rubicola* is a northern form of the African *torquata*, and the British form is also distinct.

INDIAN STONECHAT. *Saxicola torquata indica* (Blyth), i. 224. Wanderer on migration from Western Asia; two obtained.

WHINCHAT. *Saxicola rubetra rubetra* (Linnæus), i. 224. Summer resident, passage migrant.

WHEATEAR. *Œnanthe œnanthe œnanthe* (Linnæus), i. 226. Summer resident and passage migrant.

GREENLAND WHEATEAR. *Œ. œnanthe leucorhoa* (Gmelin); *Œ. œnanthe leucorrhoa* (Gmelin), i. 226, and Check-List. Passage migrant from Iceland and Greenland.

ISABELLINE WHEATEAR. *Œnanthe isabellina* (Cretzschmar), i. 229. Four, wanderers from S.E. Europe.

WESTERN BLACK-EARED WHEATEAR. *Œnanthe hispanica hispanica* (Linnæus); *Œ. stapazina* (Linnæus), i. 230. Straggler or lost wanderer from the western Mediterranean.

EASTERN BLACK-EARED WHEATEAR. *Œnanthe hispanica melanoleuca* (Güldenstadt); *Œ. stapazina* or *occidentalis* (in part), i. 230. Rare lost wanderer from Eastern Mediterranean. The systematic position and the nomenclature of these birds, formerly known as *Œ. stapazina stapazina* (Linn.), *Œ. stapazina amphileuca* (Hemp. and Ehren.), and *Œ. occidentalis* Salvadori (or *Saxicola xanthomelæna* Hemprich and Ehrenberg), has been entirely altered, as explained in the last edition of Series I. of "Birds of the British Isles," owing to the decision or discovery that the species, with eastern and western forms, is dimorphic. The wheatears have always given trouble to systematists, but it is to be hoped that their history, identification, and correct names have at last reached finality.

WESTERN DESERT-WHEATEAR. *Œnanthe deserti homochroa* (Tristram); *Œ. deserti* (Temminck), i. 231. Irregular wanderer from the south.

EASTERN DESERT-WHEATEAR. *Œ. deserti atrogularis* (Blyth); *Œ. deserti albifrons* (Brandt), i. 231. Two recorded, hopelessly lost. *Œ. albifrons* discovered to be preoccupied.

PIED WHEATEAR. *Œnanthe leucomela leucomela* (Pallas), i. 232. Two, lost wanderers, from south-east, on Scottish islands.

BLACK WHEATEAR. *Œnanthe leucura leucura* (Gmelin), i. 232. Wanderers from Southern Europe.

NORTH AFRICAN BLACK WHEATEAR. *Œnanthe leucura syenitica* (Heuglin), i. 232. One, lost on migration.

Family PRUNELLIDÆ (*Accentoridæ*, i. 233).

CONTINENTAL HEDGE-SPARROW. *Prunella modularis modularis* (Linnæus); *Accentor modularis modularis* (Linn.), i. 233. Passage migrant, and perhaps winter visitor. Bechstein's *Accentor* is a synonym of *Cinclus*, but we doubt if this discovery is sufficient reason for changing a long-established name, which was most unlikely to confuse any systematic worker, whereas the adoption of a new name is confusing to the amateur.

BRITISH HEDGE-SPARROW. *Prunella modularis occidentalis* (Hartert); *Accentor modularis* (Linn.), i. 233. Resident, summer resident, and apparently passage migrant.

ALPINE ACCENTOR. *Prunella collaris collaris* (Scopoli); *Accentor collaris* (Scop.), i. 235. Wanderer from Central Europe.

Family CINCLIDÆ.

BLACK-BELLIED DIPPER. *Cinclus cinclus cinclus* (Linnæus), i. 236. Wanderer from Scandinavia.

BRITISH DIPPER. *C. cinclus gularis* (Latham); *C. cinclus britannicus* Tschusi, i. 236. Resident. It seems a pity that those who spend so much time in seeking corrections for established names, should, when they name a new sub-species, be proved to have insufficient knowledge of the literature.

IRISH DIPPER. *C. cinclus hibernicus* Hartert, i. 236. Resident and sedentary.

Family TROGLODYTIDÆ.

WREN. *Troglodytes troglodytes troglodytes* (Linnæus), i. 238. Resident, passage migrant, and irregular winter visitor.

ST. KILDA WREN. *T. troglodytes hirtensis* Seebohm, i. 238. Resident in St. Kilda.

SHETLAND WREN. *T. troglodytes zetlandicus* Hartert, i. 238. Resident in the Shetlands.

Family HIRUNDINIDÆ.

SWALLOW. *Hirundo rustica rustica* Linnæus, i. 247. Summer visitor and passage migrant.

RED-RUMPED SWALLOW. *Hirundo daurica rufula* Temminck; *Hirundo rufula* Temm., i. 251. Occasional wanderer from S.W. Asia.

HOUSE-MARTIN. *Delichon urbica urbica* (Linnæus), i. 252. Summer resident and passage migrant.

SAND-MARTIN. *Riparia riparia riparia* (Linnæus), i. 254. Summer resident and passage migrant.

Order *PICIFORMES*.

Family PICIDÆ.

NORTHERN GREAT SPOTTED WOODPECKER. *Dryobates major major* (Linnæus), i. 258. Winter visitor from Northern Europe.

BRITISH GREAT SPOTTED WOODPECKER. *D. major anglicus* (Hartert), i. 258. Resident.

BRITISH LESSER SPOTTED WOODPECKER. *Dryobates minor comminutus* (Hartert), i. 260. Resident, wandering in winter.

GREEN WOODPECKER. *Picus viridis virescens* (C. L. Brehm); *P. viridis* Linn., i. 262. Resident, wandering in winter.

WRYNECK. *Jynx torquilla torquilla* Linnæus, i. 264. Often spelt *Iynx*. Summer resident and passage migrant.

Order *COCCYGES*.

Family CUCULIDÆ.

CUCKOO. *Cuculus canorus canorus* Linnæus, i. 266. Summer resident and passage migrant.

GREAT SPOTTED CUCKOO. *Clamator glandarius* (Linnæus), i. 271. Four recorded; wanderers from Africa.

YELLOW-BILLED CUCKOO. *Coccyzus americanus americanus* (Linnæus), i. 271. Straggler from America.

BLACK-BILLED CUCKOO. *Coccyzus erythropthalmus* (Wilson), i. 272. One recorded. American species.

Order *CORACIIFORMES.*

Family MICROPODIDÆ.

Family Cypselidæ, i. 273, and Check-List. The Check-List retains Order *Cypseli.*

SWIFT. *Micropus apus apus* (Linnæus), i. 273; *Apus apus apus* (Linn.), Check-List. Summer resident and passage migrant. *Apus* is rejected because Scopoli had, in the same work, a genus of Crustaceans, *Apos.* I agree with Dr. Hartert that this is an unnecessary change, and merely adopt it to be in line with the B.O.U. committee.

ALPINE SWIFT. *Micropus melba melba* (Linnæus), i. 275; *Apus melba melba* (Linn.), Check-List. Rare wanderer on passage from Central Europe to Africa.

NEEDLE-TAILED SWIFT. *Hirundapus caudacutus caudacutus* (Latham); *Chætura caudacuta caudacuta* (Latham), i. 276, and Check-List. Two recorded; lost wanderers from Eastern Siberia.

Family CAPRIMULGIDÆ.

NIGHTJAR. *Caprimulgus europæus europæus* Linnæus, i. 276. Summer resident; probably passage migrant.

RED-NECKED NIGHTJAR. *Caprimulgus ruficollis desertorum* Erlanger; *Caprimulgus ruficollis* Temminck, i. 279. One recorded; a North African species.

EGYPTIAN NIGHTJAR. *Caprimulgus ægyptius ægyptius* Lichtenstein, i. 280. One recorded; a wanderer from Asia or Egypt.

Family MEROPIDÆ.

BEE-EATER. *Merops apiaster* Linnæus, i. 280. A southern species whose frequent occurrence in Britain and Northern Europe suggests wandering in search of fresh breeding-ground. Has indeed nested or attempted to nest in our islands.

Family UPUPIDÆ.

HOOPOE. *Upupa epops epops* Linnæus, i. 282. Passage migrant, usually in spring, when it has nested many times and evidently strives to extend its range.

Family ALCEDINIDÆ.

KINGFISHER. *Alcedo atthis ispida* Linnæus; *A. ispida* Linn., i. 284. Resident; local movements in winter. The change in this name shows the absurdity of following certain strict rules. The African and European kingfishers are so closely related that only an expert can distinguish one from the other, and as Linnæus named an Egyptian kingfisher, *Gracula Atthis*, six pages before he named our bird *ispida*, we are told that we must adopt this as the specific title and that *ispida* becomes sub-specific.

Family CORACIIDÆ.

ROLLER. *Coracias garrulus garrulus* Linnæus, i. 287. Rare wanderer on migration.

Order *STRIGIFORMES*.

Family TYTONIDÆ (*Flammeidæ*, i. 289).

BARN-OWL. *Tyto alba alba* (Scopoli); *Flammea flammea* (Linnæus), i. 289. Resident. Linnæus, in 1766, described *Strix flammea* from a figure which is believed to represent the Short-eared Owl, and from a borrowed description of the Barn-Owl. Three years earlier Pontoppidan had figured the Short-eared Owl under the name *Strix flammea*,

which is thus accepted as the correct name, and according to Hartert, *Tyto* of Billberg is the next generic name available. Some of these figures are crude, and the descriptions slight, but we are asked to alter well-established names because of the conjecture that a certain bird was intended, when earlier students of ornithological literature held other opinions. There is always the possibility that future ornithologists may reverse these opinions.

DARK-BREASTED BARN-OWL. *T. alba guttata* (C. L. Brehm); *Flammea flammea guttata* (Brehm), i. 289. Irregular migrant from Northern Europe.

Family STRIGIDÆ.

LONG-EARED OWL. *Asio otus otus* (Linnæus), i. 292. Resident and winter visitor.

SHORT-EARED OWL. *Asio flammeus flammeus* (Pontoppidan); *Asio accipitrinus* (Pallas), i. 294. Resident, winter visitor, passage migrant. See Barn-Owl for explanation of change of name.

BRITISH TAWNY OWL. *Strix aluco sylvatica* Shaw; *Strix aluco* Linnæus, i. 296. Resident. Smaller than the Continental bird, and less frequently grey, but the difference between the two forms is slight, and the bird is very variable.

SNOWY OWL. *Nyctea nyctea* (Linnæus), i. 298. Winter visitor from far north.

EUROPEAN HAWK-OWL. *Surnia ulula ulula* (Linnæus), i. 299. Very rare wanderer from Northern Europe or Asia.

AMERICAN HAWK-OWL. *S. ulula caparoch* (P. L. S. Müller), i. 299. Very rare straggler from North America.

TENGMALM'S OWL. *Cryptoglaux funerea funerea* (Linnæus); *Ægolius funereus funereus* (Linn.), Check-List; *Nyctala funerea* (Linn.), i. 300. Rare straggler from North Europe. Hartert rejected *Nyctala* on a technical point,

and now his name has been turned down by the majority of the committee.

SCOPS-OWL. *Otus scops scops* (Linnæus), i. 301. Rare visitor on passage migration.

EAGLE-OWL. *Bubo bubo bubo* (Linnæus), i. 302. Rare wanderer from Northern Europe.

LITTLE OWL. *Carine noctua mira* (Witherby); *Athene noctua vidalii* A. E. Brehm, Check-List; *Carine noctua* (Scopoli), i. 303. An introduced species which is well established. Immigration uncertain. Witherby, who is responsible for the sub-specific name *mira*, has changed his mind after seeing a larger series of skins. *Athene* was rejected because of a genus of moths, *Athena*, which Hartert thinks, very wisely, is an insufficient reason for making a change.

Order *ACCIPITRIFORMES.*

Family VULTURIDÆ.

GRIFFON-VULTURE. *Gyps fulvus fulvus* (Hablizl), i. 305. Wanderer from South Europe or Africa. Two recorded.

EGYPTIAN VULTURE. *Neophron percnopterus percnopterus* (Linnæus), i. 306. Two, wanderers from Mediterranean.

Family FALCONIDÆ.

MARSH-HARRIER. *Circus æruginosus æruginosus* (Linnæus), i. 306. Resident and wanderer.

HEN-HARRIER. *Circus cyaneus cyaneus* (Linnæus), i. 309. Resident, winter visitor, and passage migrant.

MONTAGU'S HARRIER. *Circus pygargus* (Linnæus), i. 311. Summer resident, wanderer, or passage migrant.

BUZZARD. *Buteo buteo buteo* (Linnæus), i. 313. Resident, winter visitor, and irregular migrant.

STEPPE BUZZARD. *B. buteo vulpinus* Gloger, i. 366. One, wanderer from Russia, possibly. Other records rejected.

ROUGH-LEGGED BUZZARD. *Buteo lagopus lagopus* (Brünnich), i. 316. Winter visitor and passage migrant.

GOLDEN EAGLE. *Aquila chrysaëtus chrysaëtus* (Linnæus), i. 317. Resident in Scotland—wandering elsewhere, especially when immature.

GREATER SPOTTED EAGLE. *Aquila clanga* Pallas; *Aquila fusca* Brehm, i. 319. Rare wanderer from Baltic or further east. *A. fusca* had been used before "for a bird which appears to be a Golden Eagle."

GOSHAWK. *Astur gentilis gentilis* (Linnæus); *Accipiter gentilis gentilis* (Linn.), Check-List; *Astur palumbarius* (Linn.), i. 322. Rare wanderer from Europe. May have bred in Britain. Some authorities refuse to separate *Astur* from *Accipiter*, and there is apparently very good argument in favour of this. Linnæus described the Goshawk twice, thinking that two different phases of plumage were distinct species, and as *gentilis* is used a few pages earlier than *palumbarius* that name is now adopted. Should a few pages warrant a change of an established name?

AMERICAN GOSHAWK. *A. gentilis atricapillus* (Wilson); *Astur atricapillus* (Wilson), i. 323. Has occasionally reached us from North America. Formerly treated as a distinct species.

SPARROW-HAWK. *Accipiter nisus nisus* (Linnæus), i. 324. Resident, winter visitor, and passage migrant.

WHITE-TAILED EAGLE. *Haliaëtus albicilla* (Linnæus), i. 320. Formerly resident. Now passage migrant or immature wanderer.

KITE. *Milvus milvus milvus* (Linnæus), i. 326. Rare resident. Irregular migrant from Europe on passage.

BLACK KITE. *M. milvus migrans* (Boddaërt), i. 328. Exceptional wanderer north from Southern Europe.

HONEY BUZZARD. *Pernis apivorus apivorus* (Linnæus), i. 329. Formerly nested, when allowed. Passage migrant.

GYR-FALCON. *Falco rusticolus rusticolus* Linnæus; *Hierofalco gyrfalco* (Linn.), i. 331. Very rare wanderer; recorded instances complicated by the fact that falconers' birds have escaped on several occasions. The generic name of *Hierofalco* has happily been discarded but the change of the specific name is unfortunate. Here again Linnæus described two Swedish Gyr-Falcons in different plumage under two names, and *rusticolus* appears earlier by three pages!

ICELAND FALCON. *Falco rusticolus islandus* Brünnich; *Hierofalco islandus* (Brünn.), i. 331. Rare wanderer on migration from Iceland.

GREENLAND FALCON. *F. rusticolus candicans* Gmelin; *H. islandus candicans* (Gmelin), i. 331. Rare wanderer on migration from Greenland or North America. Now treated as a sub-species of the Gyr.

PEREGRINE FALCON. *Falco peregrinus peregrinus* Tunstall, i. 333. Resident, passage migrant, and immature wanderer.

AMERICAN PEREGRINE or DUCK-HAWK. *F. peregrinus anatum* Bonaparte, i. 333. Two recorded stragglers from North America.

HOBBY. *Falco subbuteo subbuteo* Linnæus, i. 336. Summer resident and wanderer.

MERLIN. *Falco columbarius æsalon* Tunstall; *Falco æsalon* Tunstall, i. 338. Resident and passage migrant. *Falco æsalon* was rejected as a *nomen nudum*, though what constitutes such an objection is a matter of opinion, and the International Commission did not agree with the editors of the "Hand-List," and considered that under certain circumstances Tunstall's names might stand. But, because between the American and British birds are slight differences—"merely degrees of coloration," the two are considered one species, and unfortunately *columbarius* has priority.

RED-FOOTED FALCON. *Falco vespertinus vespertinus* Linnæus, i. 341. Rare passage migrant.

KESTREL. *Falco tinnunculus tinnunculus* Linnæus, i. 342. Resident, winter visitor, and passage migrant.

LESSER KESTREL. *Falco naumanni naumanni* Fleischer, i. 345. Rare wanderer northward from Mediterranean countries.

OSPREY. *Pandion haliætus haliætus* (Linnæus), i. 346. Nested until recently. Now only a passage migrant.

Order *PELECANIFORMES.*

Family PHALACROCORACIDÆ.

CORMORANT. *Phalacrocorax carbo carbo* (Linnæus), i. 348. Resident, many migrating south in autumn.

SHAG. *Phalacrocorax aristotelis aristotelis* (Linnæus); *Phalacrocorax graculus* (Linnæus), i. 352. Resident, wandering less than the Cormorant. Another unfortunate discovery of double naming by Linnæus, but as both names are given by the same man, how can confusion be caused if the usually accepted name be allowed to stand?

Family SULIDÆ.

GANNET. *Sula bassana* (Linnæus), i. 354. Resident, but wandering south in winter.

Order *ANSERIFORMES.*

Family ANATIDÆ.

GREY LAG-GOOSE. *Anser anser* (Linnæus), ii. 1. Resident and winter visitor.

BEAN-GOOSE. *Anser fabalis fabilis* (Latham), ii. 4. Winter visitor.

WHITE-FRONTED GOOSE. *Anser albifrons* (Scopoli), ii. 5. Winter visitor.

LESSER WHITE-FRONTED GOOSE. *Anser erythropus* (Linnæus), ii. 6. Very rare wanderer in winter.

3 *Pl.* 122. *T* 278.

Egyptian Vulture. (pp. 154, 275).

3 *Pl.* 123

Nest of Long-tailed Duck. (pp. 172, 281).

T 279.

PINK-FOOTED GOOSE. *Anser brachyrhynchus* Baillon, ii. 7. Winter visitor.

SNOW-GOOSE. *Chen hyperboreus hyperboreus* (Pallas), ii. 8. Rare wanderer from Arctic Asia or America.

GREATER SNOW-GOOSE. *C. hyperboreus nivalis* (Forster), ii. 8. Very rare wanderer from Greenland.

BRENT GOOSE. *Branta bernicla bernicla* (Linnæus), ii. 10. Winter visitor.

BARNACLE-GOOSE. *Branta leucopsis* (Bechstein), ii. 11. Winter visitor and passage migrant.

RED-BREASTED GOOSE. *Branta ruficollis* (Pallas), ii. 14. Very exceptional wanderer from West Siberia.

The B.O.U. committee do not recognise the Canada Goose, *Branta canadensis* (Linnæus), though it is now well established, and its claim to inclusion as an introduced species seems to be as sound as that of the Mute Swan and Little Owl. They now follow the "Practical Handbook" in rejecting the Pale-breasted Brent, *B. b. glaucogaster* (Brehm), which was included in 1915.

WHOOPER SWAN. *Cygnus cygnus* (Linnæus), ii. 15. Winter visitor, which has nested several times.

BEWICK'S SWAN. *Cygnus bewickii bewickii* Yarrell, ii. 17. Winter visitor and passage migrant.

MUTE SWAN. *Cygnus olor* (Gmelin), ii. 19. Introduced. Possibly occasional winter visitor, as it breeds in Northern Europe.

COMMON SHELD-DUCK. *Tadorna tadorna* (Linnæus), ii. 20. Resident; probably summer visitor and winter visitor.

RUDDY SHELD-DUCK. *Casarca ferruginea* (Pallas); *Tadorna casarca* (Linnæus), ii. 24. Rare and irregular wanderer rather than winter visitor. Name altered through the recognition of Vroeg's Catalogue.

MALLARD or WILD DUCK. *Anas platyrhyncha platyrhyncha* Linnæus, ii. 26. Resident, winter visitor, and passage migrant. The time-honoured name *A. boschas* is rejected because Linnæus named the female *platyrhynchos* two pages before he named the male!

GADWALL. *Anas strepera* Linnæus, ii. 29. Resident and winter visitor.

GARGANEY. *Querquedula querquedula* (Linnæus), ii. 31 ; *Anas querquedula* Linnæus, Check-List. Summer resident, and perhaps passage migrant.

BLUE-WINGED TEAL. *Querquedula discors* (Linnæus), ii. 34 ; *Anas discors* Linn., Check-List. Rare wanderer from America.

TEAL. *Querquedula crecca crecca* (Linnæus), ii. 35 ; *Anas crecca crecca* Linnæus, Check-List. Resident, summer resident, winter visitor, and passage migrant.

AMERICAN GREEN-WINGED TEAL. *Querquedula crecca carolinensis* (Gmelin), ii. 38 ; *Anas crecca carolinensis* Gmelin, Check-List. Rare wanderer from America.

WIGEON. *Mareca penelope* (Linnæus), ii. 38 ; *Anas penelope* Linnæus, Check-List. Resident, winter visitor, and passage migrant.

AMERICAN WIGEON. *Mareca americana* (Gmelin), ii. 41 ; *Anas americana* Gmelin, Check-List. Rare wanderer from America.

SHOVELER. *Spatula clypeata* (Linnæus), ii. 42. Resident, winter visitor, and passage migrant.

PINTAIL. *Dafila acuta acuta* (Linnæus), ii. 44 ; *Anas acuta acuta* Linnæus, Check-List. Resident, winter visitor, and passage migrant. It will be seen that the editors of the " Practical Handbook " find no justification in splitting the genera of British surface-breeding ducks, except in the case of the Shoveler, a decision which I welcome.

RED-CRESTED POCHARD. *Netta rufina* (Pallas), ii. 47. Breeds in Mediterranean countries and wanders north ; has reached Britain on several occasions.

WHITE-EYED POCHARD. *Nyroca nyroca nyroca* (Güldenstadt), ii. 48. Not infrequent wanderer from Europe.

POCHARD. *Nyroca ferina ferina* (Linnæus), ii. 49. Resident, winter visitor, and perhaps passage migrant.

SCAUP. *Nyroca marila marila* (Linnæus), ii. 52. Resident, winter visitor, and passage migrant.

[RING-NECKED DUCK. *Nyroca collaris* (Donovan), ii. 366. Not admitted a place in the "Practical Handbook." An American species figured from a specimen obtained in Leadenhall Market, said to have been taken in Lincolnshire.]

TUFTED DUCK. *Nyroca fuligula* (Linnæus), ii. 54. Resident, winter visitor, and passage migrant.

GOLDENEYE. *Glaucionetta clangula clangula* (Linnæus); *Bucephala clangula clangula* (Linn.), Check-List; *Glaucion clangula* (Linn.), ii. 58. Winter visitor and passage migrant. There is a difference of opinion about the correct generic name.

BUFFEL-HEADED DUCK. *Glaucionetta albeola* (Linnæus); *Bucephala albeola* (Linn.), Check-List; *Glaucion albeola* (Linn.), ii. 61. A rare straggler from North America.

HARLEQUIN-DUCK. *Histrionicus histrionicus histrionicus* (Linnæus), ii. 61. A very rare straggler, which nests so near as Iceland.

LONG-TAILED DUCK. *Clangula hyemalis* (Linnæus), ii. 62. Winter visitor and passage migrant, sometimes abundant. Also occasional summer visitor which has nested in Orkney and Shetland.

STELLER'S EIDER. *Polysticta stelleri* (Pallas); *Heniconetta stelleri* (Pallas), ii. 65. Two, stragglers from the Arctic.

EIDER. *Somateria mollissima mollissima* (Linnæus), ii. 66. Resident and irregular winter visitor or vagrant.

KING-EIDER. *Somateria spectabilis* (Linnæus), ii. 69. Rare wanderer from the Arctic.

COMMON SCOTER. *Melanitta nigra nigra* (Linnæus); *Oidemia nigra nigra* (Linn.), Check-List; *Œdemia nigra* (Linn.), ii. 71. Resident, winter visitor, and passage migrant. There is considerable doubt about the actual dates when the names *Melanitta* of Boie and *Oidemia* of Fleming (not *Œdemia* as usually spelt) were published,

but some authorities declare that they believe—they cannot prove—that Boie's name in *Isis* appeared in May. 1822, and that Fleming's "Philosophy of Zoology" not until June of that year. On the strength of this *supposition* the B.O.U. committee decided to alter the name! The editors of the "Practical Handbook" very wisely refuse to make the change without better proof, and in any case it seems absurd to upset the well-established name because of a month's priority.

VELVET-SCOTER. *Melanitta fusca fusca* (Linnæus); *Oidemia fusca fusca* (Linn.), Check-List; *Œdemia fusca* (Linn.), ii. 73. Winter visitor and passage migrant.

SURF-SCOTER. *Melanitta perspicillata* (Linnæus); *Oidemia perspicillata* (Linn.), Check-List; *Œdemia perspicillata* (Linn.), ii. 75. Rare wanderer from North America.

GOOSANDER. *Mergus merganser merganser* Linnæus, ii. 76. Resident and winter visitor.

RED-BREASTED MERGANSER. *Mergus serrator* Linnæus, ii. 79. Resident, winter visitor and passage migrant.

HOODED MERGANSER. *Lophodytes cucullatus* (Linnæus), ii. 81; *Mergus cucullatus* Linnæus, Check-List. Very rare wanderer from North America.

SMEW. *Mergellus albellus* (Linnæus), ii. 82; *Mergus albellus* Linnæus, Check-List. Winter visitor, and perhaps passage migrant. The refusal of the editors of the "Practical Handbook" to subdivide the Sawbills is appreciated.

Order *PHŒNICOPTERIFORMES.*

Family PHŒNICOPTERIDÆ.

FLAMINGO. *Phœnicopterus ruber antiquorum* Temminck; *Phœnicopterus antiquorum* Temm., ii. 84. Vagrant from West Siberia or South Europe. Records now complicated by the numbers of birds which have escaped from captivity. The western and eastern Flamingoes are one species, but racial differences warrant sub-specific rank.

3 *Pl.* 124. *T* 282.

Purple Heron. (pp. 180. 283).

3 *Pl.* 125.

Great White Heron. (pp. 180, 283).

T 283.

Order *ARDEIFORMES.*

Family ARDEIDÆ.

HERON. *Ardea cinerea cinerea* Linnæus, ii. 85. Resident, local wandering. Passage migrant.

PURPLE HERON. *Ardea purpurea purpurea* Linnæus, ii. 87. Wanderer on passage.

GREAT WHITE HERON. *Egretta alba alba* (Linnæus), ii. 88. Rare wanderer from S.E. Europe or Asia.

LITTLE EGRET. *Egretta garzetta garzetta* (Linnæus), ii. 89. One or two lost wanderers from S.E. Europe or Central Asia.

BUFF-BACKED HERON. *Ardeola ibis ibis* (Linnæus), ii. 89. One or two wanderers from Southern Europe.

SQUACCO HERON. *Ardeola ralloides* (Scopoli), ii. 90. Not infrequent westward and northward wanderer from South Europe.

NIGHT-HERON. *Nycticorax nycticorax nycticorax* (Linnæus), ii. 92. Wanderer on passage from Central Europe.

LITTLE BITTERN. *Ixobrychus minutus minutus* (Linnæus), ii. 90. Wanderer from South or Central Europe.

BITTERN. *Botaurus stellaris stellaris* (Linnæus), ii. 93. Restricted resident, winter visitor and passage migrant.

AMERICAN BITTERN. *Botaurus lentiginosus* (Montagu), ii. 97. Rare wanderer from North America.

Family CICONIIDÆ.

WHITE STORK. *Ciconia ciconia ciconia* (Linnæus), ii. 98. Irregular passage migrant.

BLACK STORK. *Ciconia nigra* (Linnæus), ii. 99. Irregular passage migrant, or wanderer on migration.

Family PLATALEIDÆ.

SPOONBILL. *Platalea leucorodia leucorodia* Linnæus, ii. 99. Rare passage migrant.

Family IBIDIDÆ.

GLOSSY IBIS. *Plegadis falcinellus falcinellus* (Linnæus), ii. 101. East and South European bird which frequently, almost annually, wanders north and west. May be called an autumn passage migrant.

Order *GRUIFORMES.*

Family BALEARICIDÆ (Family *Gruidæ*, ii. 103).

CRANE. *Megalornis grus grus* (Linnæus), ii. 103. Rare wanderer on passage migration.

Order *CHARADRIIFORMES.*

Family OTIDIDÆ.

GREAT BUSTARD. *Otis tarda tarda* Linnæus, ii. 105. Rare wanderer from Europe or Siberia. Formerly bred.

LITTLE BUSTARD. *Otis tetrax orientalis* Hartert; *Otis tetrax* Linnæus, ii. 107. Wanderer on passage migration. All examples which have been examined are of the Eastern and not the Western or South European form. It is therefore probable that these have wandered on migration from Siberia or Central Europe.

MACQUEEN'S BUSTARD. *Chlamydotis undulatus macqueenii* (J. E. Gray), ii. 108. Four recorded wanderers from West Siberia or other Asiatic haunt.

Family ŒDICNEMIDÆ (Family *Burhinidæ*, Check-List).

STONE-CURLEW. *Œdicnemus œdicnemus œdicnemus* (Linnæus), ii. 109; *Burhinus œdicnemus œdicnemus* (Linn.), Check-List. Summer resident, occasionally wintering. Hartert wishes to alter the name because he considers that the European and Australian birds are "not generically separable," and that Burhinus is the older name.

Family CURSORIIDÆ.

CREAM-COLOURED COURSER. *Cursorius cursor cursor* (Latham); *Cursorius gallicus* (Gmelin), ii. 111. Rare wanderer from North Africa. Latham's name antedates Gmelin's.

Family GLAREOLIDÆ.

COLLARED PRATINCOLE. *Glareola pratincola pratincola* (Linnæus), ii. 113. Wanderer from Mediterranean countries.

BLACK-WINGED PRATINCOLE. *Glareola nordmanni* Fischer, ii. 114. Rare straggler from S.E. Europe or Asia.

Family CHARADRIIDÆ

GREY PHALAROPE. *Phalaropus fulicarius* (Linnæus), ii. 114. Passage migrant, sometimes numerous in autumn.

RED-NECKED PHALAROPE. *Phalaropus lobatus* (Linnæus), ii. 117. Summer resident and passage migrant.

WOODCOCK. *Scolopax rusticola rusticola* Linnæus, ii. 120. Resident, summer resident, winter visitor, and passage migrant.

COMMON SNIPE. *Capella gallinago gallinago* (Linnæus); *Gallinago gallinago* (Linn.), ii. 123. Resident, summer resident, winter visitor and passage migrant. Hartert says, "Unfortunately Capella has priority."

FÆROE SNIPE. *Capella gallinago færoeensis* (C. L. Brehm), ii. 123. Winter visitor from Iceland and Færoes.

GREAT SNIPE. *Capella media* (Latham); *Gallinago media* (Latham), ii. 126. Passage migrant.

JACK SNIPE. *Lymnocryptes minimus* (Brünnich); *Limnocryptes gallinula* (Linn.), ii. 127. Winter visitor and passage migrant. Brünnich's name antedates *gallinula* by two years.

BROAD-BILLED SANDPIPER. *Limicola falcinellus falcinellus* (Pontoppidan), ii. 129. Wanderer on passage migration.

TEREK SANDPIPER. *Terekia cinerea* (Güldenstadt), ii. 130. Rare visitor on passage migration from N.E. Europe or Siberia.

KNOT. *Calidris canutus canutus* (Linnæus); *Canutus canutus* (Linn.), ii. 130. Winter visitor and passage migrant. Linnæus called the Knot *Tringa canutus*, then *Tringa* was transferred to the Sandpipers and *Erolia* given as the next name for Stints and Dunlins. Next the Knot was separated generically under the name *Canutus*, and thus appeared in the Hand-List in 1912. In 1917 the editors had changed their minds and "lumped" under *Erolia*, but "the discovery of the anonymous article in the 'Allgemeine Literatur-Zeitung' (dated 1804) necessitates the acceptance of the name *Calidris* for the genus called *Erolia*." Who was the anonymous writer, and what is the overlooked journal? Surely there must be some end to this changing of opinion, digging up unknown literature, and consequent confusion.

LITTLE STINT. *Erolia minuta* (Leisler), ii. 133; *Calidris minuta* (Leisler), Check-List. Passage migrant from North Europe or Asia.

AMERICAN STINT. *Erolia minutilla* (Vieillot), ii. 135; *Calidris minutilla* (Vieillot), Check-List. Four or five wanderers from North America. It will be noted that the B.O.U. committee have not yet discarded *Erolia* entirely, but they may be talked over any time, and then a fresh list may appear.

TEMMINCK'S STINT. *Erolia temminckii* (Leisler), ii. 136; *Calidris temminckii* (Leisler), Check-List. Irregular passage migrant from North Europe.

AMERICAN PECTORAL SANDPIPER. *Erolia maculata* (Vieillot), ii. 137; *Calidris maculata* (Vieill.), Check-List. Occasional wanderer from Arctic America.

SIBERIAN PECTORAL SANDPIPER. *Erolia acuminata* (Horsfield), ii. 138; *Calidris acuminata* (Horsf.), Check-List. One or two wanderers from Northern Asia.

BAIRD'S SANDPIPER. *Erolia bairdii* (Coues), ii. 138. About four wanderers from Arctic America.

BONAPARTE'S SANDPIPER. *Erolia fuscicollis* (Vieillot), ii. 139; *Calidris fuscicollis* (Vieill.), Check-List. Rare wanderer on migration from Arctic America or Greenland.

PURPLE SANDPIPER. *Erolia maritima maritima* (Brünnich), ii. 139; *Calidris maritima maritima* (Brünn.), Check-List. Winter visitor and passage migrant from Arctic Europe or America.

DUNLIN. *Erolia alpina alpina* (Linnæus), ii. 141; *Calidris alpina alpina* (Linn.), Lapland Dunlin, Check-List. Winter visitor and passage migrant from Iceland and North Europe.

SOUTHERN DUNLIN. *E. alpina schinzii* (C. L. Brehm), ii. 142; *Calidris alpina schinzii* (Brehm), Check-List. Resident, and perhaps also passage migrant or winter visitor from Scandinavia or elsewhere in Europe. Opinions have altered several times about the validity of Schinz's Dunlin.

CURLEW-SANDPIPER. *Erolia testacea* (Pallas); *Calidris testacea* (Pallas), Check-List; *Erolia ferruginea* (Brünnich), ii. 145. Passage migrant. Pallas's name, in the unfortunate Vroeg's Catalogue, does not antedate Brünnich's, but the latter was considered by the majority of the Committee to be preoccupied by Pontoppidan for a bird which is indeterminate. In any case it is a great pity to make another change in a name which not very long ago replaced the well-established name *subarquata*.

BUFF-BREASTED SANDPIPER. *Tryngites subruficollis* (Vieillot), ii. 147. Rare visitor from the Arctic.

SANDERLING. *Crocethia alba* (Pallas); *Calidris arenaria* (Linnæus), ii. 148. Winter visitor and passage migrant. Vroeg's Catalogue is in two parts, and at first the name *leucophæa*, which is in the first part, was used, but now it

is decided that as only the second part is binomial this name is not tenable, and *alba*, which appears later, has to be substituted! *Calidris* is preoccupied.

RUFF. *Philomachus pugnax* (Linnæus); *Machetes pugnax* (Linnæus), ii. 150. Passage migrant and occasional summer resident. *Philomachus* is another anonymous name, and the change I consider quite unnecessary.

SEMIPALMATED SANDPIPER. *Ereunetes pusillus pusillus* (Linnæus), ii. 153. One record of this American bird.

BARTRAM'S SANDPIPER. *Bartramia longicauda* (Bechstein), ii. 153. Occasional wanderer from America.

REDSHANK. *Tringa totanus totanus* (Linnæus), ii. 154. Resident, summer resident, winter visitor, and passage migrant.

ICELAND REDSHANK. *Tringa totanus robusta* (Schiöler), ii. 154. Winter visitor, but few examples identified.

SPOTTED REDSHANK. *Tringa erythropus* (Pallas); *Tringa maculata* (Tunstall), ii. 156. Rare passage migrant from Arctic Europe. Another alteration through the discovery of Vroeg's Catalogue.

GREATER YELLOWSHANK. *Tringa melanoleuca* (Gmelin), ii. 157. Two stragglers from North America.

YELLOWSHANK. *Tringa flavipes* (Gmelin), ii. 158. About half a dozen stragglers from America.

MARSH-SANDPIPER. *Tringa stagnatilis* (Bechstein), ii. 158. Rare wanderer from Siberia or S.E. Europe.

GREENSHANK. *Tringa nebularia* (Gunnerus), ii. 159. Summer resident and passage migrant.

COMMON SANDPIPER. *Tringa hypoleucos* Linnæus, ii. 160. Summer resident and passage migrant. Winters occasionally.

SPOTTED SANDPIPER. *Tringa macularia* Linnæus, ii. 163. Very rare wanderer from America.

GREY-RUMPED SANDPIPER. *Tringa brevipes* (Vieillot); *Tringa incana brevipes* (Vieill.), ii. 168, and Check-List. East Siberian species once recorded.

GREEN SANDPIPER. *Tringa ochropus* Linnæus, ii. 164. Passage migrant and winter visitor. Nesting suspected but not proved.

WOOD-SANDPIPER. *Tringa glareola* Linnæus, ii. 165. Passage migrant. Has nested.

SOLITARY SANDPIPER. *Tringa solitaria solitaria* Wilson, ii. 167. Rare wanderer from North America.

RED-BREASTED SNIPE. *Limnodromus griseus griseus* (Gmelin); *Macrorhamphus griseus* (Gmelin), ii. 168. Rare wanderer from North America. The majority of the B.O.U. committee rejected *Macrorhamphus* on a purely technical point; Hartert, however, wishing it to be recorded that he disagreed, thinking the change unnecessary, and that the name was not preoccupied, Lacépède's genus being *Macrorhamphosus*.

BLACK-TAILED GODWIT. *Limosa limosa limosa* (Linnæus), ii. 171. Passage migrant, occasionally staying for both winter and summer. Formerly nested.

BAR-TAILED GODWIT. *Limosa lapponica lapponica* (Linnæus), ii. 169. Passage migrant and winter visitor.

CURLEW. *Numenius arquata arquata* (Linnæus), ii. 173. Resident, summer resident, winter visitor and passage migrant.

WHIMBREL. *Numenius phæopus phæopus* (Linnæus), ii. 176. Summer resident and passage migrant.

ESKIMO CURLEW. *Numenius borealis* (Forster), ii. 178. Seven or eight recorded as wanderers to Britain from Arctic America, where it is now believed to be extinct.

SLENDER-BILLED CURLEW. *Numenius tenuirostris* (Vieillot), ii. 178. Western Siberian species which winters in the Mediterranean and has been recorded as a vagrant a few times.

BLACK-WINGED STILT. *Himantopus himantopus* (Linnæus), ii. 179. Breeds in Mediterranean countries and has wandered to Britain many times.

AVOCET. *Recurvirostra avosetta* Linnæus, ii. 180. Passage migrant.

SOUTHERN GOLDEN PLOVER. *Pluvialis apricarius apricarius* (Linnæus); *Charadrius apricarius* Linnæus, ii. 182; *C. apricarius apricarius* Linn., Check-List. Resident and local migrant; perhaps summer resident. In the "Practical Handbook" the name was *Ch. a. oreophilos* (Meinertzhagen) and the bird was described as the British Golden Plover, but Hartert argues that the British bird is the one occurring in the Baltic, and described by Linnæus.

NORTHERN GOLDEN PLOVER. *Pluvialis apricarius altifrons* (C. L. Brehm); *Charadrius apricarius altifrons* Brehm., Check-List. Winter visitor and passage migrant. The question is still rather uncertain, as comparatively few have been examined.

AMERICAN GOLDEN PLOVER. *Pluvialis dominicus dominicus* (P. L. S. Müller); *Charadrius dominicus dominicus* Müll., Check-List and ii. 185. Very occasional wanderer from Arctic America.

EASTERN GOLDEN PLOVER. *Pluvialis dominicus fulvus* (Gmelin); *Charadrius dominicus fulvus* Gmelin, ii. 185 and Check-List. Occasional wanderer on passage from Arctic Asia or Alaska.

GREY PLOVER. *Squatarola squatarola squatarola* (Linnæus), ii. 186. Winter visitor and passage migrant.

RINGED PLOVER. *Charadrius hiaticula hiaticula* Linnæus; *Ægialitis hiaticula* (Linnæus), ii. 187. Resident, winter visitor, and passage migrant.

KENTISH PLOVER. *Charadrius alexandrinus alexandrinus* Linnæus; *Ægialitis alexandrina* (Linnæus), ii. 191. Summer resident and passage migrant.

LITTLE RINGED PLOVER. *Charadrius dubius curonicus* Gmelin; *Ægialitis dubia* (Scopoli), ii. 193. Rare wanderer from Europe or Asia.

SEMIPALMATED RINGED PLOVER. *Charadrius semipalmatus* Bonaparte, ii. 192. A North American bird once reported.

3 *Pl.* 126. *1* 290.

Kentish Plover. (pp. 206, 290).

3 *Pl.* 127.

Killdeer Plover. (pp. 206, 291).

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KILLDEER PLOVER. *Charadrius vociferus* Linnæus; *Ægialitis vocifera* (Linn.), ii. 193. Very rare wanderer from North America.

CASPIAN PLOVER. *Charadrius asiaticus asiaticus* Pallas; *Ægialitis asiatica* (Pallas), ii. 194. A very rare westward wanderer. It will be noted that the B.O.U. committee have returned to the formerly accepted genus *Charadrius*.

DOTTEREL. *Eudromias morinellus* (Linnæus), ii. 194; *Charadrius morinellus* Linnæus, Check-List. Summer resident and passage migrant.

SOCIABLE PLOVER. *Chettusia gregaria* (Pallas), ii. 197. Very rare wanderer from Western Asia or Eastern Europe.

LAPWING. *Vanellus vanellus* (Linnæus), ii. 197. Resident, summer resident, winter visitor, passage migrant.

OYSTER-CATCHER. *Hæmatopus ostralegus ostralegus* Linnæus, ii. 201. Resident, summer resident, passage migrant, and winter visitor.

TURNSTONE. *Arenaria interpres interpres* (Linnæus), ii. 204. Winter visitor and passage migrant.

Order *LARIFORMES*.

Family LARIDÆ.

COMMON GULL. *Larus canus canus* Linnæus, ii. 206. Resident, summer resident and winter visitor.

HERRING-GULL. *Larus argentatus argentatus* Pontoppidan, ii. 209. Resident, wandering in winter. Perhaps summer resident and passage migrant.

YELLOW-LEGGED HERRING-GULL. *Larus argentatus cachinnans* Pallas; *Larus cachinnans* Pallas, ii. 212. Occasional wanderer on passage from Europe or Asia.

GREAT BLACK-BACKED GULL. *Larus marinus* Linnæus, ii. 213. Resident and passage migrant.

LESSER BLACK-BACKED GULL. *Larus fuscus fuscus* Linnæus, ii. 215. Passage migrant and winter visitor from North Europe.

BRITISH LESSER BLACK-BACKED GULL. *Larus fuscus affinis* Reinhardt, ii. 216. Summer resident and passage migrant. The exact status of the two forms is not yet clear.

GLAUCOUS GULL. *Larus hyperboreus* Gunnerus; *Larus glaucus* Brünnich, ii. 218. Winter visitor. Brünnich's name preoccupied.

ICELAND GULL. *Larus glaucoides* Meyer; *Larus leucopterus* Faber, ii. 220. Winter visitor. Faber's *leucopterus* preoccupied.

GREAT BLACK-HEADED GULL. *Larus ichthyaëtus* Pallas, ii. 221. Rare wanderer from the Mediterranean.

MEDITERRANEAN BLACK-HEADED GULL. *Larus melanocephalus* Temminck, ii. 221. Rare wanderer from the Mediterranean.

BONAPARTE'S GULL. *Larus philadelphia* (Ord), ii. 222. Straggler from Arctic America.

BLACK-HEADED GULL. *Larus ridibundus ridibundus* Linnæus, ii. 222. Resident, summer resident, winter visitor, and passage migrant.

LITTLE GULL. *Larus minutus* Pallas, ii. 226. Winter visitor and passage migrant.

ROSS'S GULL. *Rhodostethia rosea* (Macgillivray), ii. 228. Once recorded; casual wanderer from the Arctic.

SABINE'S GULL. *Xema sabini* (Sabine), ii. 228. Uncommon winter visitor from Arctic Asia or Greenland.

IVORY GULL. *Pagophila eburnea* (Phipps), ii. 229. Wanderer from the Arctic.

KITTIWAKE. *Rissa tridactyla tridactyla* (Linnæus), ii. 230. Resident, more or less pelagic in winter, and winter visitor.

CASPIAN TERN. *Hydroprogne caspia* (Pallas); *Sterna caspia* Pallas, ii. 244. Occasional wanderer, perhaps from the Baltic.

GULL-BILLED TERN. *Geochelidon nilotica nilotica* (Gmelin), *Sterna anglica* Montagu, ii. 244. Rare wanderer from

European coasts. Gmelin's name long antedates Montagu's, but it is a pity that so great a change is necessary. There is a difference of opinion about the use of *nilotica*, as Gmelin made an error in his description of the bird.

COMMON TERN. *Sterna hirundo hirundo* Linnæus, ii. 233. Summer resident and passage migrant.

ARCTIC TERN. *Sterna macrura* Naumann; *Sterna paradisea* Brünnich, ii. 237. Summer resident and passage migrant. This is another name that has been altered, in spite of disagreement on the B.O.U. committee, for it is by no means certain what bird was meant by Pontoppidan's *paradisea* which antedates Brünnich's name by a year. The change however may be forgiven, seeing that it returns to us the name we had got used to in Saunders's Manual and other well-known books.

ROSEATE TERN. *Sterna dougallii dougallii* Montagu, ii. 239. Summer resident and wanderer.

LITTLE TERN. *Sterna albifrons albifrons* Pallas; *Sterna minuta* Linnæus, ii. 241. Summer resident and passage migrant. Alteration in the name due to Vroeg's Catalogue.

SANDWICH TERN. *Sterna sandvicensis sandvicensis* Latham, ii. 245. Summer resident and passage migrant.

SOOTY TERN. *Sterna fuscata* Linnæus (the Check-List uses the trinomial); *Sterna fuliginosa* Gmelin, ii. 248. A North Atlantic bird, wandering when not nesting. This is a return to a name formerly rejected.

BLACK TERN. *Chlidonias niger niger* (Linnæus); *Hydrochelidon nigra* (Linnæus), ii. 248. Passage migrant. The generic name altered because of a name of a tern, certainly not correct for this species, published by Rafinesque in 1822 in the *Kentucky Gazette*! The alteration in the specific name is in accordance with a rule which has not been universally approved.

WHISKERED TERN. *Chlidonias leucopareius leucopareius* (Temminck); *Hydrochelidon leucopareia* (Temminck), ii. 252. Rare wanderer from Southern Europe or Africa.

WHITE-WINGED BLACK TERN. *Chlidonias leucopterus* (Temminck); *Hydrochelidon leucoptera* (Temminck), ii. 251. Wanderer on what looks like passage migration.

GREAT SKUA. *Catharacta skua skua* Brünnich, ii. 253; *Stercorarius skua skua* (Brünnich), Check-List. Resident and winter visitor. The editors of the "Practical Handbook" do not consider that the Great Skua is generically distinct from the other Skuas, adding that if it is, each should be in a separate genus.

RICHARDSON'S SKUA. *Stercorarius parasiticus* (Linnæus), ii. 256. Resident and winter visitor.

BUFFON'S SKUA. *Stercorarius longicaudus* Vieillot, ii. 258. Passage migrant.

POMATORHINE SKUA. *Stercorarius pomarinus* (Temminck), ii. 261. Passage migrant and winter visitor.

Order *ALCIFORMES*.

Family ALCIDÆ.

RAZORBILL. *Alca torda* Linnæus, ii. 263. Summer resident, pelagic in winter.

GREAT AUK. *Alca impennis* Linnæus, ii. 266. Extinct.

NORTHERN GUILLEMOT. *Uria aalge aalge* (Pontoppidan); *Uria troille* (Linnæus), ii. 267. Apparently resident in extreme north—Shetlands and Orkneys; winter visitor further south.

SOUTHERN GUILLEMOT. *Uria aalge albionis* Witherby; *Uria troille* (Linn.), ii. 267. Resident, more or less pelagic in winter. In 1923 Jourdain showed that *U. troille* was described from a Spitzbergen Brünnich's Guillemot and that the name must be altered to *aalge*, and at the same time Witherby published his discovery that the Northern and Southern birds differed.

BRÜNNICH'S GUILLEMOT. *Uria lomvia lomvia* (Linnæus), ii. 270. Wanderer from the Arctic.

BLACK GUILLEMOT. *Uria grylle grylle* (Linnæus), ii. 270 Resident and wanderer.

LITTLE AUK. *Alle alle* (Linnæus), ii. 273. Winter visitor, sometimes in large numbers.

PUFFIN. *Fratercula arctica grabæ* (C. L. Brehm); *Fratercula arctica* (Linnæus), ii. 275. Resident, wandering in winter. The British Puffin is recognised as a southern and smaller sub-species of *F. a. arctica.*

Order *PROCELLARIIFORMES.*

Family THALASSIDROMIDÆ.

STORM-PETREL. *Thalassidroma pelagica* (Linnæus), ii. 279; *Hydrobates pelagicus* (Linn.), Check-List. Resident, pelagic in winter.

LEACH'S PETREL. *Oceanodroma leucorrhoa leucorrhoa* (Vieillot), ii. 281. Resident and pelagic.

MADEIRAN PETREL. *Oceanodroma castro* (Harcourt), ii. 282. Casual wanderer in autumn or winter from Atlantic islands.

WILSON'S PETREL. *Oceanites oceanicus* (Kuhl), ii. 283. Nests in South Polar regions, wanders north during southern winter. Has occurred off our shores, and a few have been obtained.

ATLANTIC FRIGATE-PETREL. *Pelagodroma marina hypoleuca* (Webb, Berthelot, and M.-Tandon); *Pelagodroma marina* (Latham), ii. 283. Nests on Atlantic islands; two have been recorded on our shores.

MANX SHEARWATER. *Puffinus puffinus puffinus* (Brünnich), ii. 284. Summer resident; pelagic in winter.

WESTERN MEDITERRANEAN SHEARWATER. *Puffinus puffinus mauretanicus* Lowe; *Puffinus puffinus yelkouan* (Acerbi), ii. 284. Occasional wanderer to British seas. All British examples that have been examined are referable to this form and not, as formerly believed, to the Eastern *yelkouan.*

SOOTY SHEARWATER. *Puffinus griseus* (Gmelin), ii. 288. Summer or autumn visitor, wandering north from the Southern Hemisphere.

GREAT SHEARWATER. *Puffinus gravis* (O'Reilly), ii. 289. Summer and autumn visitor; breeds in South Atlantic.

MEDITERRANEAN GREAT SHEARWATER. *Puffinus kuhlii kuhlii* (Boie), ii. 290. One, wanderer to our seas, recorded.

NORTH ATLANTIC GREAT SHEARWATER. *Puffinus kuhlii borealis* Cory, ii. 290. Nests on Atlantic islands, and wanders when not breeding. One recorded.

MADEIRAN LITTLE SHEARWATER. *Puffinus assimilis baroli* Bonaparte, ii. 291; formerly *P. obscurus* (Gmelin). Canaries and other Atlantic islands, wandering occasionally to our seas, where a few have been obtained. The difference of opinion about nomenclature is mentioned in the article on this species (ii. 291).

CAPE VERDE LITTLE SHEARWATER. *Puffinus assimilis boydi* Mathews, ii. 291. Two of this form recorded.

[CAPE PIGEON. *Daption capensis* (Linnæus), ii. 367. At least three examples of this southern bird have been recorded, and the B.O.U. committee include it in brackets, as the evidence of unassisted passage is not strong.]

FULMAR PETREL. *Fulmarus glacialis glacialis* (Linnæus), ii. 291. Resident and pelagic.

CAPPED PETREL. *Pterodroma hasitata* (Kuhl), ii. 294. Once recorded; wanderer from West Indies.

COLLARED PETREL. *Pterodroma brevipes* (Peale), ii. 294. One, wanderer from West to South Pacific.

KERMADEC PETREL. *Pterodroma neglecta* (Schlegel), ii. 295. One; only known to nest in Kermadec Islands.

BULWER'S PETREL. *Bulweria bulwerii* (Jardine and Selby), ii. 295. Madeira and other Atlantic islands, wandering in winter. Seven recorded for our shores.

BLACK-BROWED ALBATROS. *Diomedia melanophris* Temminck, ii. 296. One, wanderer from Southern Oceans.

Order *COLYMBIFORMES.*

Family COLYMBIDÆ.

BLACK-THROATED DIVER. *Colymbus arcticus arcticus* Linnæus, ii. 297. Summer resident and winter visitor.

GREAT NORTHERN DIVER. *Colymbus immer* Brünnich, ii. 300. Winter visitor and passage migrant.

WHITE-BILLED NORTHERN DIVER. *Colymbus adamsii* G. R. Gray, ii. 303. Very rare visitor from the Arctic.

RED-THROATED DIVER. *Colymbus stellatus* Pontoppidan, ii. 304. Resident, winter visitor, or passage migrant.

Order *PODICIPIDFORMES.*

Family PODICIPIDÆ.

GREAT CRESTED GREBE. *Podiceps cristatus cristatus* (Linnæus), ii. 307. Resident, migrating to coast.

RED-NECKED GREBE. *Podiceps griseigena griseigena* (Boddaërt), ii. 310. Winter visitor and passage migrant.

SLAVONIAN GREBE. *Podiceps auritus* (Linnæus), ii. 312. Resident (restricted), winter visitor and passage migrant.

BLACK-NECKED GREBE. *Podiceps nigricollis nigricollis* C. L. Brehm, ii. 314. Resident (restricted), winter visitor, and passage migrant.

LITTLE GREBE. *Podiceps ruficollis ruficollis* (Pallas); *Podiceps fluviatilis* (Tunstall), ii. 316. Resident and passage migrant. Often retiring to sea in winter.

Order *RALLIFORMES.*

Family RALLIDÆ.

WATER-RAIL. *Rallus aquaticus aquaticus* Linnæus, ii. 319. Resident, winter visitor, and passage migrant.

SPOTTED CRAKE. *Porzana porzana* (Linnæus), ii. 321. Summer resident, passage migrant, and occasional winterer.

CAROLINA CRAKE or SORA. *Porzana carolina* (Linnæus), ii. 323. Rare wanderer from North America.

BAILLON'S CRAKE. *Porzana pusilla intermedia* (Hermann), ii. 323. Occasional wanderer from Europe.

LITTLE CRAKE. *Porzana parva* (Scopoli), ii. 325. Rare passage migrant.

CORN-CRAKE. *Crex crex* (Linnæus), ii. 325. Summer resident and passage migrant.

MOOR-HEN. *Gallinula chloropus chloropus* (Linnæus), ii. 328. Resident, probably passage migrant.

COOT. *Fulica atra atra* Linnæus, ii. 331. Resident, movement to sea in winter.

Order *COLUMBIFORMES.*

Family COLUMBIDÆ.

STOCK-DOVE. *Columba œnas* Linnæus, ii. 334. Resident and winter visitor.

RING-DOVE or WOOD-PIGEON. *Columba palumbus palumbus* Linnæus, ii. 336. Resident, winter visitor and passage migrant.

ROCK-DOVE. *Columba livia livia* Gmelin, ii. 339. Resident.

TURTLE-DOVE. *Streptopelia turtur turtur* (Linnæus), ii. 340. Summer resident.

EASTERN TURTLE-DOVE. *Streptopelia orientalis orientalis* (Latham), ii. 342. One recorded. A far Eastern species.

Order *PTEROCLETIFORMES.*

Family PTEROCLETIDÆ.

PALLAS'S SAND-GROUSE. *Syrrhaptes paradoxus* (Pallas), ii. 343. Irregular invader.

Order *GALLIFORMES.*

Family PHASIANIDÆ

PHEASANT. *Phasianus colchicus* Linnæus, ii. 345. Introduced.

RED-LEGGED PARTRIDGE. *Alectoris rufa rufa* (Linnæus); *Caccabis rufa* (Linnæus), ii. 348. Introduced. Some suggestion of possible immigration. Generic name changed because *Alectoris* was published three pages before *Caccabis*!

PARTRIDGE. *Perdix perdix perdix* (Linnæus), ii. 350. Resident.

QUAIL. *Coturnix coturnix coturnix* (Linnæus), ii. 353. Summer resident.

Family TETRAONIDÆ.

CAPERCAILLIE. *Tetrao urogallus urogallus* Linnæus, ii. 355. Resident; British stock extinct, but present due to introduction from Sweden.

BRITISH BLACK GROUSE. *Lyrurus tetrix britannicus* Witherby and Lonnberg, ii. 357. Resident.

SCOTCH (or BRITISH) RED GROUSE. *Lagopus scoticus scoticus* (Latham), ii. 360. Resident.

IRISH RED GROUSE. *Lagopus scoticus hibernicus* (Kleinschmidt). Resident. Hebrides and Ireland.

SCOTTISH PTARMIGAN. *Lagopus mutus millaisi* Hartert; *Lagopus mutus* (Montin), ii. 363. Resident.

The following names have been altered (see *Ibis*, 1928, 321, 322). The Red-throated Pipit becomes *Anthus rufogularis* Brehm, and the Iceland Gull, *Larus leucopterus* Vieillot (*nec* Faber).

Witherby now considers that the Little Owl should be called *Carine* (or *Athene*) *noctua vidalii* Brehm, and not *mira*.

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